

## **PREHOSPITAL TREATMENT PROTOCOLS**

**EFFECTIVE To Be Announced**

Draft 1.0 – FOR INTERNAL REVIEW ONLY

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## Introduction

This document is the first third draft of the 2011 Maine EMS protocol changes and represents initial discussions between the Maine EMS Medical Direction and Practice Board (MDPB) as well as the EMS Regional Directors, physicians and EMS providers attending the MDPB meetings. THIS IS NOT THE FINAL DRAFT. The purpose of this document is to alert Maine EMS stakeholders of the upcoming changes to the protocols and allow a period of public comment regarding these changes. Intended stakeholder may include, but are not limited to, Maine EMS prehospital providers, EMS service leadership, physicians, nurses, PA's, NP's and hospital administration.

Each section will be preceded by a summary page. This page is intended to give the reviewer a quick summary of the major changes to that protocol section, the purpose of these changes as well as expected impact of those changes. Items UNDERLINED represent Quality Targets in the new Maine EMS protocols and are intended to be easily identified by the EMS provider. As this is a new practice for Maine EMS, this version of the Maine EMS protocols will focus Quality Targets in the Airway Management and Chest Pain Protocol.

This document represents the third draft of the 2011 Maine EMS Protocols. Individuals interested in adding comments, please contact Matthew Sholl at [shollm@mac.com](mailto:shollm@mac.com). Beginning in the Winter of 2011, the MDPB will begin final review of this document. All interested stakeholders are invited to attend these review sessions. For a schedule of when each section is reviewed, please contact your Regional EMS Director, Regional EMS Medical Director, or Maine EMS.

Thank you for your time and interest in this process.

Matthew Sholl, Steve Diaz, Jay Bradshaw

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## AUTHORIZATION FOR PROTOCOLS

These protocols are issued by the Medical Directions and Practice Board and govern the practice of EMS licensees by the authority of 32 MRSA § 86.2-A. All Maine emergency physicians and the regional EMS programs were invited to participate in the review and adoption of these protocols through their MEMS Regional Councils.

The Regional Medical Directors agree that when treatments are adopted in their regions, they will be consistent with these protocols.

These protocols will be continually reviewed. New or revised protocols will be issued in adhesive-backed pages that can be easily placed over the protocol being replaced or on one of the blank pages provided at the end of the protocol book. **All changes will also be listed on the Protocol Errata form located on the Maine EMS website.**

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## Purple Section (Definitions) Summary of Changes

Location of Change (in this document)	Change	Purpose Of Change	Expected Impact
Page 10	"Dual Lumen Airway Device" changed to "Blind Insertion Airway Device"	Maintain consistency with medical literature and common terminology of these devices.	Minimal educational impact.
Page 10	"supraglottic or transglottic tube" changed to "supraglottic or transglottic airway"	Better reflect the variety of airway management options available to the EMS provider	Minimal educational impact
Page 12	"Profound hypovolemia or hemodynamic instability (Systolic BP less than 90 mm Hg) with alteration of mental status <b>or other evidence of shock</b> "	Added "other evidence of shock" to clarify indications for Intraosseous Access	Minimal
Page 12	Amended contraindications to placement of an Intraosseous Device as follows: "a) Fracture of the tibia or femur <b>in lower extremity placement or fracture of the humerus in upper extremity placement</b> b) <b>Evidence of infection at insertion site</b> c) IO within <b>the prior</b> 24 hours d) Knee replacement <b>(identified by midline vertical scar over the patella)</b> e) Tumor near site f) Inability to locate landmarks g) Excessive tissue at insertion site h) IO access is not intended for prophylactic use.	a) Include contraindications for the placement of an IO device in the lateral, proximal humerus  b) Added additional contraindicaiton  c) Clarified  d) Added clarity regarding identification of knee replacment	Educational



Added “Medial Malleolus/Distal Tibia” as approved sites for placement of IO

Reflect additional approved sites of placement of IO device

Educational

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## DEFINITIONS

**“ACLS”** means advanced cardiac life support.

**“Advanced Airway”** means the skills of endotracheal intubation and use of other airway modalities such as **Blind Insertion Airway** Device performed only by those who have completed practical training in each of these skills as approved by their Regional Medical Control.

**“AHA”** means the American Heart Association

**“ALS” (Advanced Life Support)** means the ability to provide advanced level of medical care, which in the prehospital realm means EMT-Critical Care or EMT-Paramedic. The ALS skills may include the following: IV access, advanced airway, cardiac monitoring, and/or oral or parenteral medications.

**“ALS (Advanced Life Support) If Available”** means that the patient shall receive the highest appropriate ALS intervention as soon as possible. The decision in this realm as to which interventions may be appropriate rests with the critical care technician or paramedic, if available. If any skills other than basic life support are deemed necessary or initially implemented, an ALS response should be sought, with simultaneous dispatch if possible. The use of a medical priority dispatching program, approved by the state medical director, is encouraged. When this cannot happen, the crew in attendance should bring ALS care and the patient together in the fastest of three ways: (1) ALS back-up at the scene; (2) ALS back-up met en route; or (3) ALS by hospital staff in the emergency department if prehospital rendezvous is not possible.

The BLS providers on the scene may modify the ALS response as appropriate.

**“ARC”** means the American Red Cross.

**“Automatic Ventilation”** Automatic ventilators (time-cycled, pressure controlled) approved by Maine EMS, may be used to assist ventilations when a BIAD or ETT is in place by the intermediate, critical care, or paramedic provider.

**“AVPU”** means Alert, responsive to Verbal stimuli, responsive to Painful stimuli, or Unresponsive.

**“BP”** in these protocols refers to the *systolic* blood pressure.

**“Central Lines”** means any IV catheter device, which gains access to a patient’s central circulation. EMS providers may monitor an indwelling central line (such as a Port-a-cath) which has been accessed or established prior to EMS transport.

**“Critical Care Technician/Paramedic Back-up”** means using an advanced life support resource when a presenting patient needs more than basic life support. As noted above, in the prehospital setting this usually indicates a critical care technician or paramedic response. An ALS back-up agreement should be written between EMS provider services routinely offering and accepting ALS back-up support. This would establish medical/operational/liability expectations of both services. These protocols cannot mandate any service to routinely offer or receive back-up. However, any decision in this regard, particularly to refuse to offer or accept ALS back-up, should be grounded in reasonable medical, operational, or financial considerations and should be reviewed by the individual service’s legal counsel.

**“Emergency Department”** means a hospital that provides an organized Emergency Service or Department that is available twenty-four (24) hours a day, seven (7) days a week and has the capability to provide On-Line Medical Control, to evaluate, treat, stabilize, and to refer to an appropriate outside resource all persons who present themselves for treatment.

**“EMS Provider”** means any person or service licensed by Maine EMS to provide emergency medical services.

**“ETCO2”** means a colormetric device or capnometry/capnography, which may be used to confirm endotracheal intubation.

**“Fluid Challenge”** indicates maximum fluid administration achievable without pumps or other special equipment in the field setting. Specifically, running a large bore IV wide-open until 300-500 ml of fluid has been administered, and repeating this process until a desirable blood pressure, based on the patient’s underlying condition, is achieved. A true IO bolus, at the appropriate dose with a syringe/3-way stop-cock assembly, is acceptable. Pediatric boluses are 20 ml/kg, and may be repeated one time if patient remains hypotensive.

**“Greater/Less Than”** In these protocols “>” means “greater than,” and “<” means “less than.” Example: “BP <100” means “BP less than 100.”

**“ILS” (Intermediate Life Support)** means the ability to provide EMT-Intermediate level care.

**“IO”** in these protocols, means intraosseous access. IO may be used in any patient if an IV is not established within two attempts or 90 seconds and that patient has one of the following:

- a) Altered mental status (GCS less than or equal to 8)
- b) Respiratory Failure (SaO<sub>2</sub> less than or equal to 90% after appropriate oxygen therapy, Respiratory rate less than 10 or greater than 40 breaths per minute) with alteration of mental status.
- c) Profound hypovolemia or hemodynamic instability with alteration of mental status or other evidence of shock

d) Cardiac Arrest (Medical or Traumatic)

With discussion with OLMC, may consider IO placement for the following conditions:

- a) Profound hypovolemia (Systolic BP less than 90 mm Hg) without alterations in mental status or other evidence of shock
- b) Burn patients with bilateral upper extremity burns

\*IO is Contraindicated in the following conditions:

- a) Fracture of the tibia or femur in lower extremity placement or fracture of the humerus in upper extremity placement
- b) Infection at insertion site
- c) IO within the prior 24 hours
- d) Knee replacement (identified by midline vertical scar over the patella)
- e) Tumor near site
- f) Inability to locate landmarks
- g) Excessive tissue at insertion site
- h) IO access is not intended for prophylactic use.

Approved Sites (one per bone):

- a) Anterior/medial Tibia
- b) Lateral Humerus
- c) Medial Malleolus/Distal Tibia

**"IV"** means any balanced electrolyte solutions may be used, such as Lactated Ringers and Normal Saline. Normal Saline is the fluid of choice for patients with history of renal failure, not Lactated Ringers. Recommended catheter size for rapid fluid resuscitation in adults is 14-18 gauge. If rapid fluid resuscitation is not required, smaller catheter sizes and heparin/saline locks may be used. Heparin used for this procedure is not considered a medication.

**"MDPB"** means Maine EMS Medical Directions and Practice Board, which consists of the six Regional Medical Directors, a Physician representing the Maine Chapter of the American College of Emergency Physicians, and the State EMS Medical Director.

**"NR"** means a non-rebreather oxygen mask.

**"O<sub>2</sub>"** means oxygen therapy as appropriate for patient.

**“On Line Medical Control”** (“OLMC”) refers to the on-line physician/physician assistant/nurse practitioner who is licensed by the State of Maine and authorized by a hospital to direct emergency medical services persons consistent with the protocols developed by the MDPB.

**“Other Appropriate Destination”** means a facility that has been approved by the Board of EMS to receive via ambulance patients who are in need of emergency care.

**“Pediatric Patient”** in these protocols, means prepubertal (without pubic, axillary, or facial hair).

**“PPV”** means positive pressure ventilation device such as (in order of preference): two-person bag-valve-mask technique with oxygen, one-person bag-valve-mask technique with oxygen, mouth-to-mask ventilation with oxygen, and mouth-to-mask ventilation without oxygen.

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## Brown (Forward) Summary of Changes

Location of Change (in this document)	Change	Purpose of Change	Expected Impact
Page 17, Section 5	Added "Any such protocol should be patient-centric and created only to offer patients emergent care only available at selected regional sites. Examples of such protocols include the Maine EMS Trauma System."	Added clarity for the purpose of regional destination protocols	Education of both EMS providers and EMS stakeholders including hospital providers.
Page 17, Section 7	Amended the following:  "MEMS patient/run record will be legible and thoroughly completed for each call, or for each patient when more than one patient is involved in a call. This document is our legacy of patient care and holds information valuable to hospital providers. Services are encouraged to leave a completed copy of the patient/run report at the hospital before they leave. In rare circumstances, when it is not possible to complete this record before leaving the hospital, the services may provide the hospital with a Maine EMS approved, one page patient care summary. THIS DOCUMENT DOES NOT REPLACE THE COMPLETED	Our PRIMARY objective in EMS is the provision of excellent patient care. The Institute of Medicine has identified transfers in patient care as highly dangerous. The information obtained, the treatments rendered, and the any resultant changes in patient status are valuable information for downstream providers and needs to be provided to hospitals.	Operational

	<p><b>RUN REPORT.</b> Services must complete this report and make the original copy available to the hospital as soon as possible. “</p>		
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Page 23, Section 23 (New)	<p>Added: Patient Sign-Offs – Patient initiated sign offs should only be considered in patients with decision making capacity, resources available to care for themselves and when non-transport is considered safe. In situations which the patient requests sign off but the EMS provider deems inappropriate, please refer to OLMC. <b>EMS System initiated patient sign offs are tremendously risky interactions and should not occur. All sign offs must be reviewed with OLMC and the service is expected to review all of these events through the service's quality assurance mechanism. Patient medical records must be completed for all of these interactions.</b></p>	<p>Patient sign offs extremely risky patient interactions. The purpose of this addition is to identify the genesis of patient sign offs (either patient-initiated or EMS Provider initiated), script necessary elements for patient-initiated sign offs and minimize EMS Provider initiated sign offs.</p>	<p>Educational and Operational</p>
Page 23, Section 24 (new)	<p>Added : <b>“Maine EMS Special Circumstance Protocols:</b> Maine EMS protocols are intended to address the vast majority of medical emergencies encountered by an EMS provider. While intended to be comprehensive, certain patients exist with rare medical conditions that require highly specialized emergent care. In such situations, Maine EMS has created the “Special Circumstance Protocols”. These are prearranged medical protocols</p>	<p>The purpose of this is educational, alerting EMS providers of the “Maine EMS Special Circumstances Protocol”. This was created to account for patients with highly specialized needs.</p>	<p>Educational (and Operational, should a community become interested in holding a Special Circumstances Protocol)</p>

specialized to individual patients, suggested by the patient's medical provider and ratified by the EMS service medical director or, in lieu of a service medical director, the Regional Medical Director. Each of these protocols must then be approved by Maine EMS and held on file at Maine EMS. Patients will present with a "Maine EMS Special Circumstance Protocol Form" that outlines the patient's individual protocol and is signed by both the patient's physician and the EMS service medical director or Regional Medical Director. These special circumstance protocols should be made known to local EMS services and providers. In cases of question or uncertainty regarding the nature of the protocol, please refer to OLMC. "		
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## FOREWORD

These protocols were developed for the following reasons:

1. To provide the EMS provider with a quick field reference, and
2. To develop written standards of care which are consistent throughout the state of Maine.

Users of these protocols are assumed to have knowledge of more detailed and basic patient management principles found in EMS textbooks and literature appropriate to the EMS provider's level of training and licensure.

***EMS providers are encouraged to contact OLMC in any situation in which advice is needed, not only in situations as directed by these written protocols.***

To use these protocols as they were intended, it is necessary to know the philosophy, treatment principles, and definitions, which guided the physicians and other EMS providers who drafted these protocols:

1. **Delays in treatment should very RARELY delay transport!** This is especially true for trauma patients, patients with chest pain and patients with suspected stroke. IV's should be started en route except in those situations where treatment at the scene is in the patient's best interest, such as shock, with prolonged extrication, or a cardiac patient when full ACLS care is available. Delays in transport should be discussed with OLMC.
2. **Inability to establish voice contact with OLMC.** There are rare situations where the patient is unstable and delay in treatment threatens the patient's life or limb. If, after good-faith attempts, the advanced EMT cannot contact OLMC, then the advanced EMT is authorized to use any appropriate treatment protocols as if they were standing orders. In such cases treatments must still be consistent with the advanced EMT's training and licensure. Continue attempts to contact OLMC and document these attempts on the patient run record.
3. **Transports and transfers.** During transports and transfers, ambulance crews will follow these MEMS protocols, including use of only those medications and procedures for which they are trained and authorized by protocol.
4. **Hospital destination choice.** If a patient needs care which the ambulance crew, in consultation with OLMC, believes cannot be provided at the most accessible hospital, the patient will be transported to the nearest facility capable of providing that care upon the patient's arrival. If, with OLMC consultation, a patient is believed to be too unstable to survive such a diversion, then the patient will be transported to the most accessible

hospital with an emergency department. Diversion is also non-binding, and if a patient insists or if the crew deems that bypass is not in the patient's best interest, then going to a hospital "on diversion" is appropriate. If OLMC contact is not possible, the ambulance crew is authorized to make this determination. OLMC cannot legally refuse these patients.

5. **Regional destination.** Each region has the authority to develop protocols, which designate the appropriate destination for patients transported from the scene. Any such protocol should be patient-centric and created exclusively to offer patients emergent care only available at selected regional sites. Examples of such protocols include the Maine EMS Trauma System.
6. **Treatments/drugs should be given in the order specified:** However, the MDPB recognizes that often treatments are delivered simultaneously and more than one protocol may be used. OLMC may request treatments/drugs out of sequence for medical reasons.
7. **MEMS patient/run record** will be legible and thoroughly completed for each call, or for each patient when more than one patient is involved in a call. This document is our legacy of patient care and holds information valuable to hospital providers. Services are encouraged to leave a completed copy of the patient/run report at the hospital before they leave. In rare circumstances, when it is not possible to complete this record before leaving the hospital, the services may provide the hospital with a Maine EMS approved, one page patient care summary. **THIS DOCUMENT DOES NOT REPLACE THE COMPLETED RUN REPORT.** Services must complete this report and make the original copy available to the hospital as soon as possible.
8. **Quality Assurance.** All EMS providers and services must be in compliance with the Regional and State Quality Improvement Program to the satisfaction of the Regional Medical Director.
9. **Assuming and Reassessing care already provided: EMS providers who will be assuming the responsibility for patient care will also be responsible for assessing the care provided before their arrival, and for all subsequent care after they arrive up to and including their level of training and licensure. If an EMS provider has not been trained in a particular treatment listed at his level, or if that treatment is not within the EMS provider's scope of practice, the provider may not perform the treatment.**
10. **If there is a paramedic on scene that is willing to:**
  - a. Accompany the EMT-I in the patient compartment of the ambulance, and
  - b. Accept responsibility for the EMT-I's actions,

Then the paramedic may direct the EMT-I to administer medications that are within the EMT-I's scope of practice. This may be accomplished without contacting OLMC as long as the medication administration would not require OLMC for the paramedic. If the paramedic is unwilling to accept the above responsibilities, then the EMT-I's **must contact OLMC before administering any medications.**

11. **Defibrillations: Intermediate EMTs** are expected to follow these protocols within the limitations of the monitor/defibrillator available to them.
12. **Carbon Monoxide monitors: Carbon Monoxide monitors** may be used for informational purposes only. Any alterations of treatment based on pulse co-oximetry readings must be approved by OLMC.
13. **Medical Control Permission: If a treatment is listed as requiring Medical Control permission** at one level and is listed again without requiring OLMC permission at a higher level, the higher-level EMT need not seek OLMC permission.
14. **Deviation from Protocols: These protocols represent a consensus of the MDPB.** In unusual situations, **OLMC may deviate from these protocols if done in the patient's best interest (OLMC must have independent practitioner status in these situations, such as physicians or independent nurse practitioners).** The deviation in care **ordered must be within the scope of practice, training and skill of the EMS provider.** The reasons for deviating from these protocols must be documented in the patient's chart. Under such circumstances, if the ALS provider agrees, the ALS provider will verify and will comply with OLMC orders, will fully document the deviation on the patient run record, and will not consider the care rendered to be an emergency medical treatment to be routinely repeated.
15. **Arrival of Officially dispatched EMS Personnel: Once EMS personnel have arrived on the scene, they may interact with other medical personnel on the scene who are not a part of the organized EMS system responses in the following manner:**
  - a. **Maine EMS licensees not affiliated with one of the responding service may only provide care within their scope of practice with the approval of the ambulance crew member in charge of the call.**
  - b. The patient's own physician, physician assistant, or nurse practitioner may direct care as long as they remain with the patient (in their absence, direction of care is subject only to these protocols and OLMC). You may assist this person within the scope of your practice and these protocols. Only a physician or independent nurse practitioner may give orders outside of the MEMS protocols (refer to #14 on page 15). Questions in this regard should be resolved by OLMC. You may show this person Protocol page "Black 1" ("Non-EMS System Medical Interveners") to assist with your explanation.

c. Other unsolicited medical interveners must be Maine licensed physicians, nurses, nurse practitioners or physician assistants whose assistance you request. Protocol page "Black 1" describes this, and should be shown to such interveners.

d. **Other health care providers in the home:** Other health care providers in the home attending the patient (e.g. R.N., L.P.N., C.N.A., Nurse Midwife, etc.) are bystanders who may be a valuable source of information. Any aid or treatment they wish to give must be authorized by OLMC. Any dispute over treatment/transport should be settled by OLMC.

16. **Home health care devices and appliance:** Many patients will have devices and appliances (drains, ports, LVAD, etc.) with which they are routinely discharged home. Patients (or their licensed care providers or previously instructed family members), are expected to maintain them on their own. These devices have some risks associated with them, but are generally considered safe in the home environment. As such, EMS providers are not restricted in the care or transfer of these patients based solely on the presence of these devices or appliances. If an issue arises and unfamiliarity with, or any questions concerning these devices that cannot be immediately resolved by the patient or caregivers, it should be referred to OLMC.

17. **Left Ventricular Assist Device (LVAD):** A surgically implanted pump to assist left ventricular function. An LVAD can be a bridge to heart transplant (although used for chronic care as well). Inform OLMC as soon as possible when interacting with a patient with a LVAD, as diversion to a hospital with a higher level of care may be suggested. Direct contact with the cardiac service responsible for this patient is also suggested at the earliest possible moment. No cardiac arrhythmia should be treated if the LVAD is functioning, as judged by an audible sound or pulse, without medical control approval for any treatment. Be sure to bring the patient's batteries (including the 24 hour battery) and the large battery charger. Local EMS services may receive specialized training and protocol exemptions to extend help to these patients by working with regional EMS medical directors and MEMS.

18. **Graduates with a current certification from a Maine EMS approved wilderness EMT course** may apply the principles of care taught in that course with the approval of the service medical director and when patient arrival at a definitive care setting will be more than 2 hours.

19. **Repeated Treatment: Unless otherwise indicated,** any treatment included in these protocols may be repeated after reassessment **and** with OLMC permission.

20. **External Pacing** (where indicated in these protocols) should be performed if a pacer is available. Pacers are not required equipment.

21. **Oxygen supplementation** will be by nasal cannula or non-rebreather mask as appropriate.
22. **MAST** (or Pneumatic Anti-Shock Garment – PASG) – If MAST is available, contact OLMC for any usage (there is no compelling indication for the routine use of MAST).
23. Patient Sign-Offs – Patient initiated sign offs should only be considered in patients with decision making capacity and resources available to care for themselves and when non-transport is considered safe. In situations which the patient requests sign off but the EMS provider deems inappropriate, please refer to OLMC. **EMS System initiated patient sign offs are tremendously risky interactions and should not occur. All sign offs must be approved by OLMC and the service is expected to review all of these events through the service’s quality assurance mechanism. Patient medical records must be completed for all of these interactions.**
24. **Maine EMS Special Circumstance Protocols:** Maine EMS protocols are intended to address the vast majority of medical emergencies encountered by an EMS provider. While intended to be comprehensive, certain patients exist with rare medical conditions that require highly specialized emergent care. In such situations, Maine EMS has created the “Special Circumstance Protocols”. These are prearranged medical protocols specialized to individual patients, suggested by the patient’s medical provider and ratified by the EMS service medical director. Patients will present with a “Maine EMS Special Circumstance Protocol Form” that outlines the patient’s individual protocol and is signed by both the patient’s physician and the EMS service medical director. These special circumstance protocols should be made known to local EMS services and providers. In cases of question or uncertainty regarding the nature of the protocol, please refer to OLMC.
25. During transport, patients should be secured to the stretcher utilizing both lateral and shoulder straps.

## TASER PROBES

The use of a TASER does not automatically necessitate an EMS response or involvement. In assessing such patients, be cognizant of the potential for underlying metabolic dysfunction. TASER probes may be removed from the subject by the deploying officer. Probes that are imbedded in a sensitive area (e.g. face, neck, breast, and genital area) may need to be removed by medical personnel. In these cases, the subject should be transported to the hospital for examination and removal of the probes by medical personnel at the hospital. Other adverse affects, if any, (e.g. respiratory difficulty, seizures, etc.) should be treated as appropriate by the applicable protocol(s).



## Blue (Respiratory) Summary of Changes

Location of Change (in this document)	Change	Purpose of Change	Expected Impact
Page 27	Changed “Maine EMS recognizes 2 major classes of rescue or alternate airway devices” to “Maine EMS recognizes 2 major classes of Blind Insertion Airway Devices (BIAD’s).”	Maintain consistency with medical literature and common terminology of these devices. Also, to begin the process of reclassifying these devices from rescue devices to primary methods of airway management in certain circumstances.	Educational
Page 27	Deleted “The Maine EMS airway algorithm calls for providers to use a rescue device if endotracheal intubation cannot be achieved.”	Maine EMS Airway Management protocols are in evolution and will take “minimally invasive” to maximally invasive” approach to airway management. Intubation will not be considered for all patients. Instead, the provider is asked to recall the goals of airway management (oxygenation, ventilation and opening/protection) then utilize the device that accomplishes these goals.	Major educational reorientation
Page 27	Altered “If an agency selects a transglottic / potentially transglottic device, <b>continuous</b> end-tidal CO <sub>2</sub> , must be used to confirm placement. <b>A C-spine collar should be considered to help protect placement of all endotracheal intubations, periglottic or transglottic airway devices.</b> ”	1) Continuous End Tidal CO <sub>2</sub> dramatically reduces the incidence of failed, unrecognized placement of an ETT or BIAD. Use of these devices has become standard in EMS 2) C-Collars – small studies have shown modest reduction in the incidence of displaced airway management devices.  Both of these changes reflect an interest in decreasing failed, unrecognized airway management	Major Impact on services will be financial. As well, there will be training and educational costs.

		Use of Continuous end tidal CO2 is the quality marker in airway management	
Page 31	Changed – Adult Airway Management Algorithm	Please review Maine EMS Airway Management “White Paper” (attached)	Education – this is perhaps the most dramatic change in this protocol update and will require a significant amount of education not only of our pre-hospital providers but also EMS leadership, Emergency Physicians and Hospital Administration
Page 32	Added – Maine EMS Failed Intubation Algorithm	Please review Maine EMS Airway Management “White Paper”	Education
Page 34	Added – CPAP to the EMT-I level for the management of Respiratory Distress with Bronchospasm	Increase utilization of CPAP for patients with bronchospastic respiratory distress and acute pulmonary edema	Educational – although, many services have already gone through the Maine EMS CPAP training program
Page 34	Removed Levalbuterol from the Formulary	Decreased utilization amongst EMS services and hospitals/health care systems across the state	Educational – minimal. Little to no operational impact and beneficial financial impact given the greater cost of Levalbuterol vs. Albuterol.
Page 34	<b>Removed</b> – “Albuterol MDI (multi-dose inhaler), 5 puffs with spacer. <b>May repeat 1 time</b> ; or Levalbuterol tartrate inhaler 5 puffs with spacer if greater than 4 years of age; or Ipratropium Bromide/Albuterol Sulfate (Combivent) Inhaler 2 puffs if greater than 1 year of age and may repeat one time in those with more significant respiratory distress – patients receiving Combivent inhaler must be	As EMS providers are routinely stocking Albuterol and Ipratropium for nebulized use, including MDI’s in the protocols was considered redundant	Educational

	questioned regarding peanut allergies prior to inhaler administration as a peanut allergy is an <b>absolute contraindication</b> to this medication.”		
Page 35	Added – “ <b>Methylprednisolone 125 mg IV</b> ” as a medical control option in patients with severe bronchospastic disease.	Steroids are standard of care for patients with asthma and COPD exacerbations. Methylprednisolone has been added to the protocol for the treatment of anaphylaxis and is extended to the treatment of bronchospastic disease, as a medical control option	There will be an educational requirement with any addition of a medication. Will also be an operation and financial impact, although the latter should be minimal based on the cost of methylprednisolone.
Between page 35 and 36	Removed – “Respiratory Arrest (with/without obstruction)	Considered redundant given the above changes in the Airway management algorithm. The included material will be covered in the Adult airway Management Protocol	Educational
Page 37 (EMT-I) and 38 (medic)	Deleted Note - ( <del>Note: CPAP use is limited to those providers who have completed the MEMS CPAP training program</del> ).	CPAP was introduced to Maine EMS in 2003 as a pilot project. Since then, CPAP has become widely used in hospitals and pre-hospital systems. CPAP will become a mainstay in the management of acute pulmonary edema patients as represents a fast, effective and safe treatment to the patient in respiratory distress from CHF or COPD	Educational – again, this has already been adopted by a number of services across the state. Those services will not need to go through the educational program.
Page 39	<b>Deleted</b> - Furosemide ( <i>Lasix</i> ) 40 mg IV  AND  Contact OLMC for OPTIONS: Fentanyl 1 microgram/kg IV to a maximum dose of 100 micrograms	The ultimate EMS drug or therapy is effective, timely and safe. With the adoption of CPAP for the management of CHF, we finally have a therapy that meets all of those goals. EMS and Hospital-based literature both highlight the dangers of misusing Lasix and the increased mortality in patients receiving Opioids or Lasix. This practice echoes other stated and EMS services across the country.	Educational – will also be beneficial operational impact as we will be stocking one less drug in the EMS drug boxes.

## MAINE EMS STATEMENT ON “RESCUE” OR “ALTERNATE” AIRWAY DEVICES

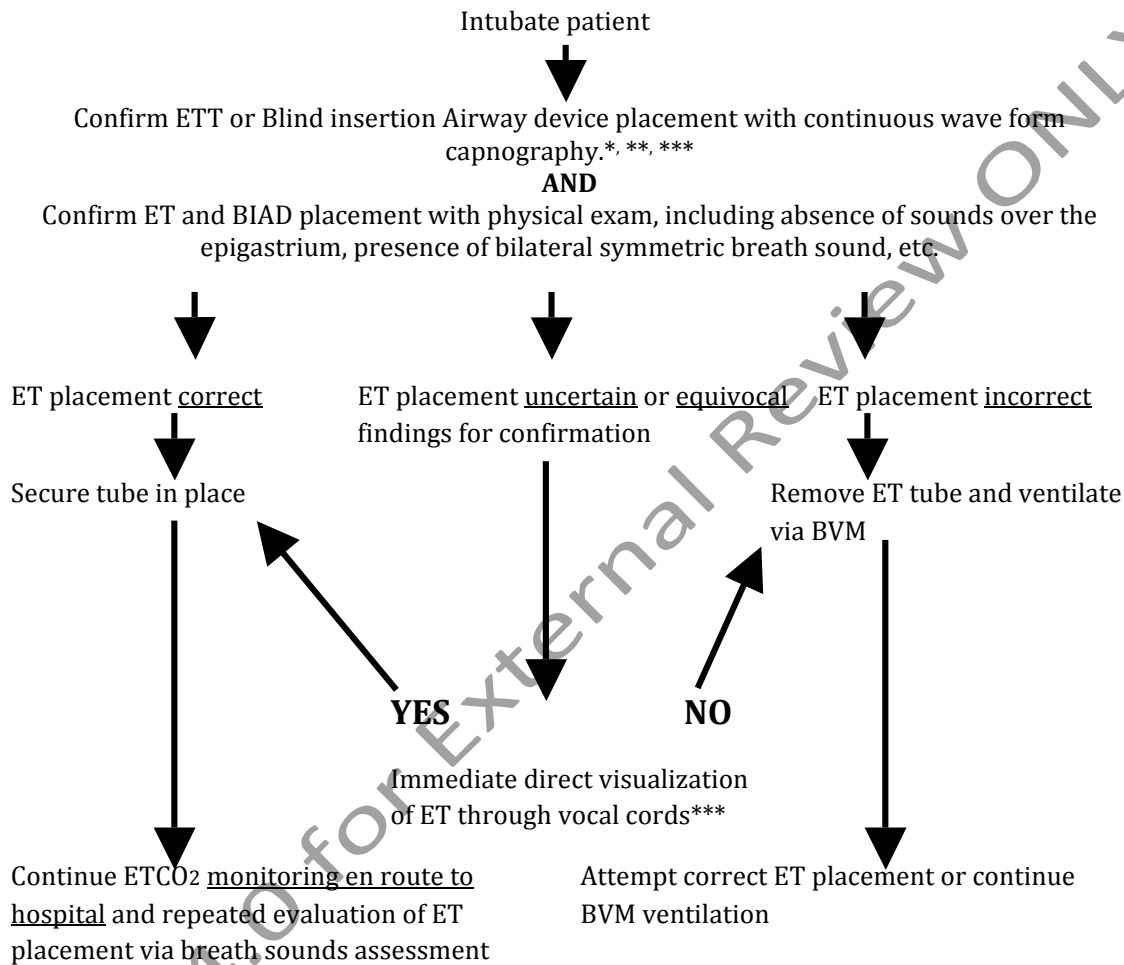
Maine EMS recognizes 2 major classes of Blind Insertion Airway Devices (BIAD's). The first class, or periglottic devices, include the LMA® and Cobra PLA®. The second class, transglottic or potentially transglottic devices include the Combitube® and King LT®.

Any FDA approved devices from these classes are approved for use. It is recommended that agencies select only one device to minimize purchase costs and initial and ongoing education.

If an agency selects a transglottic / potentially transglottic device, continuous capnography, must be used to confirm and monitor placement. A C-spine collar should be considered to help protect placement of all endotracheal intubations, periglottic or transglottic airway devices.

There are periglottic devices on the market that can be used to facilitate endotracheal intubation (e.g. ILMA®, IMA®). If these devices are placed without an attempt at endotracheal intubation, they may be treated as any other periglottic device. If they are used to assist in placing an endotracheal tube, that tube must be treated and confirmed as any other endotracheal intubation..

It is recommended to have *NO MORE THAN* one device per class (periglottic and transglottic), and if a service elects to have multiple options per class, then training and maintenance in proficiency for all devices available is required.



\* For cardiac arrest patients, consider placement of the ET tube as well as lack of pulmonary circulation in the interpretation of ETCO<sub>2</sub> findings.

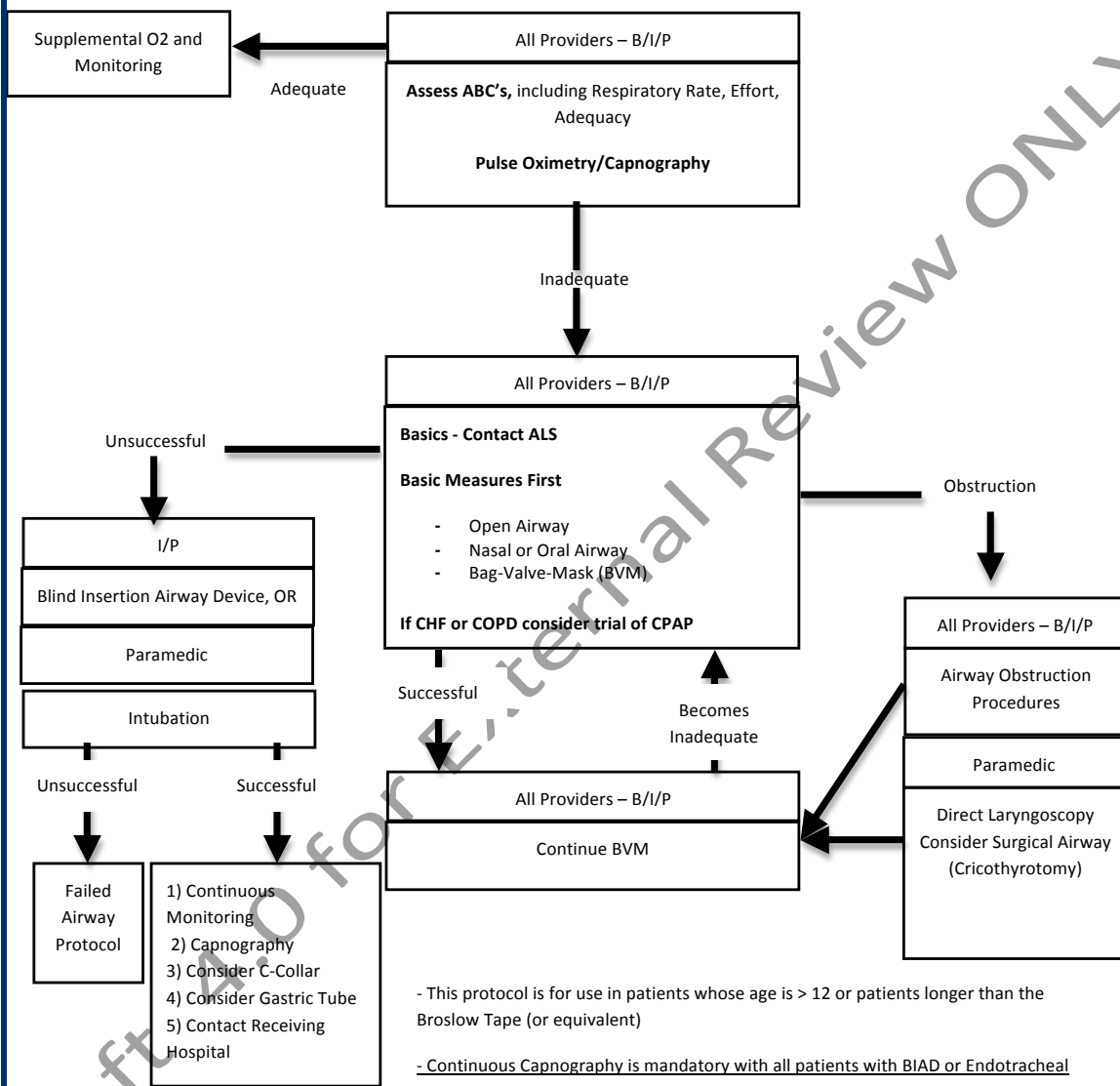
\*\* Depending on the device used, ETCO<sub>2</sub> devices may not be applicable to the pediatric patient.

\*\*\* Nasotracheally-intubated patients should be assumed to have an incorrect placement if findings of breath sounds or ETCO<sub>2</sub> results are uncertain or equivocal

# ADULT AIRWAY MANAGEMENT ALGORITHM

user 11/1/10 11:04 AM

**Comment:** Need Page Notation off Failed Intubation Algorithm



- This protocol is for use in patients whose age is > 12 or patients longer than the Broslow Tape (or equivalent)

- Continuous Capnography is mandatory with all patients with BIAD or Endotracheal Tube

- The goal of Airway Management is adequate Oxygenation, Ventilation, and Airway Protection. If an effective airway is being maintained by BVM with OPA or NPA, it is acceptable to continue with basic airway measures rather than BIAD or Intubation.

- An Intubation attempt is defined as passing a Bougie or the endotracheal tube past the teeth or inserted into the nasal passage

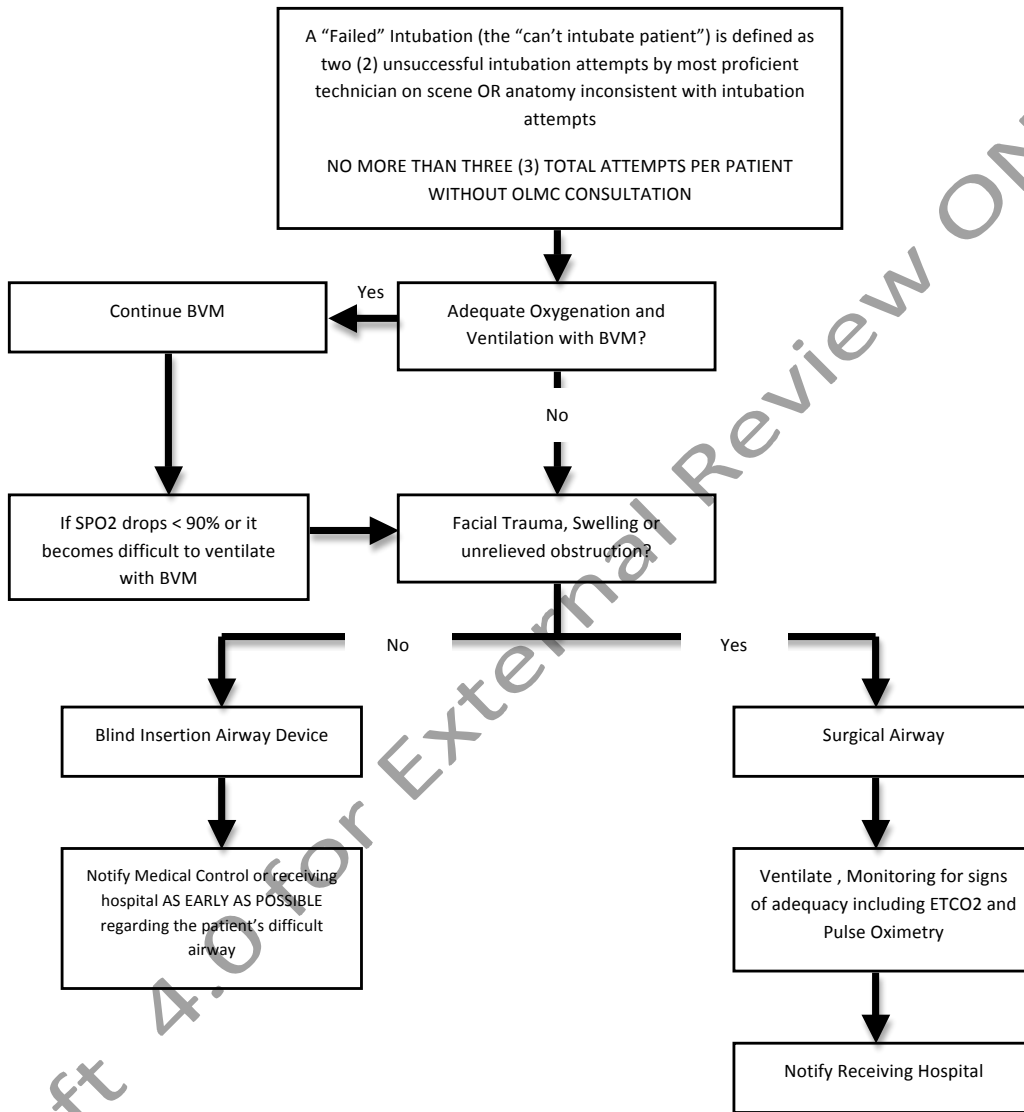
## PEARLS for Endotracheal Intubation

\* Position the airway for best view of the cords – raise head to the sniffing position (ie: earlobe in line with sternal notch)

\* Preparation: (four cornerstones) 1) ET tube with loaded stylette, 2) laryngoscope with back up blade, 3) suction, 4) Bougie

\* Always have a back-up plan should the primary strategy fail

## Maine EMS Failed Intubation Algorithm



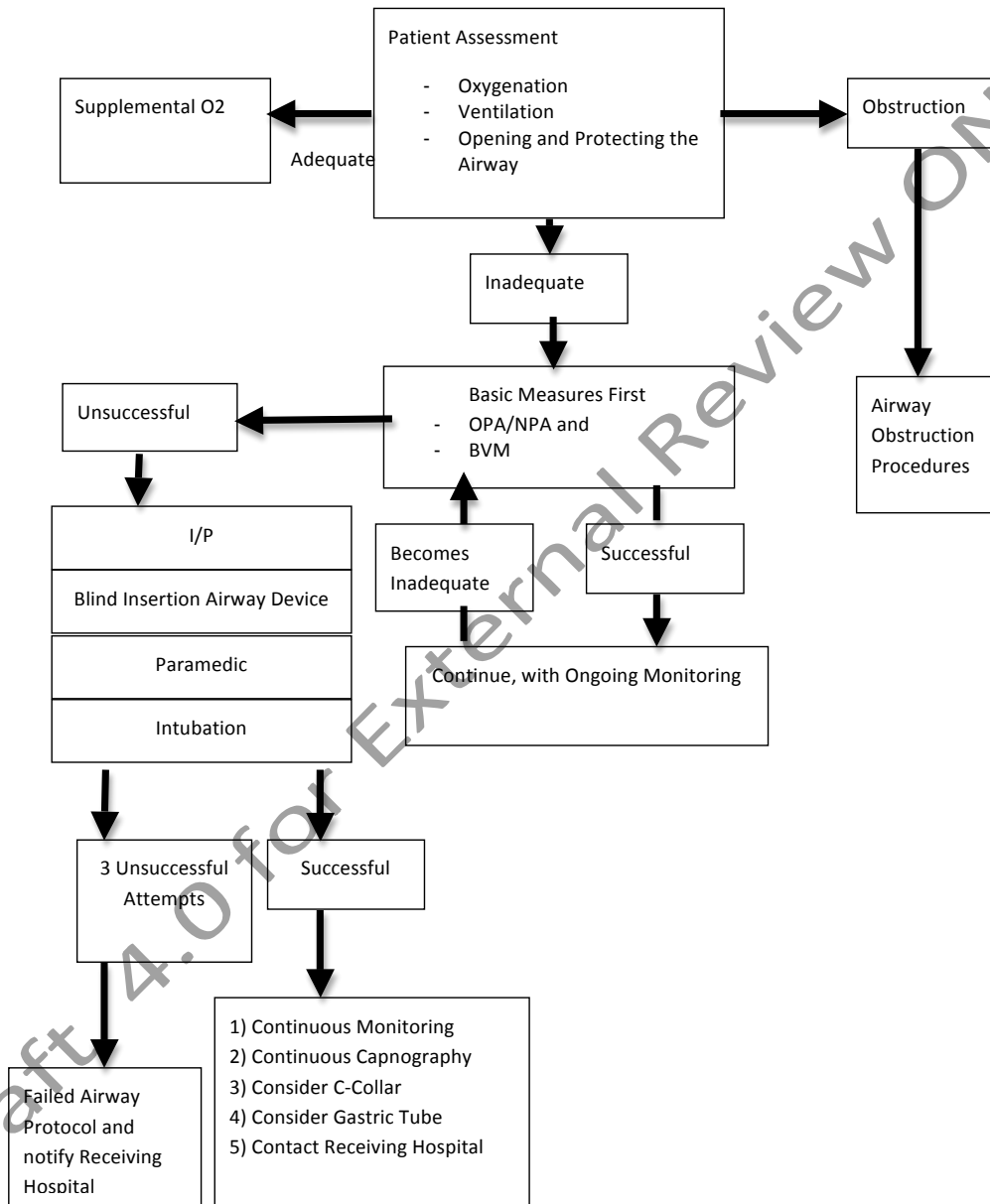
Continuous Pulse Oximetry and EtCO<sub>2</sub> monitoring should be utilized in all patients with difficult airways or respiratory distress

Notify Medical Control or receiving hospital AS EARLY AS POSSIBLE about the patient's difficult airway

FOR PEDIATRIC PATIENTS REQUIRING SURGICAL AIRWAY – Consider needle cricothyrotomy in patients < 10 years old OR If physiologically young enough that surgical landmarks are NOT identifiable

## PEDIATRIC AIRWAY ALGORITHM

Surgical airways for paramedic only!





**RESPIRATORY DISTRESS WITH BRONCHOSPASM**  
**(COPD, Emphysema, Chronic Bronchitis, Asthma)**

**CAUTION: RESPIRATORY DISTRESS MAY BE DUE TO MULTIPLE OTHER CAUSES FOR WHICH OTHER TREATMENTS MAY BE INDICATED, INCLUDING THE FOLLOWING:**

Pulmonary Edema “see page Blue 9”

Anaphylaxis “see page Gold1”

Tension Pneumothorax “see page Green 10”

**BASIC**

1. O<sub>2</sub> as appropriate
  2. If needed, assist ventilations with PPV using 100% O<sub>2</sub>
  3. Request ALS if available
- 
4. For EMT-Basic level providers – assist with self-administered bronchodilator inhaler. Tell OLMC the name of the inhaler. OLMC will prescribe number of puffs

**INTERMEDIATE**

5. Cardiac monitor
  6. Manage airway as needed “See Blue 3 & 4”
- 
7. Contact OLMC to administer Albuterol, 2.5 mg by nebulization (use 3 ml premix or 0.5 ml of 0.5% solution mixed in 2.5 ml of normal saline)
- 
8. Consider CPAP in patients > 18 y/o without Asthma– Recall that CPAP should never take the place of bronchodilators and should be used only after or in concert with inhaled bronchodilators in patients with acute bronchospasm.

The EMT-I, in consultation with OLMC, may modify the Paramedic response as appropriate.

**CRITICAL CARE / PARAMEDIC**

9. Adult/Pediatric –
  - a. Albuterol 2.5 mg by nebulization. **May repeat 1 time;** or
  - b. Ipratropium Bromide 0.5 mg / Albuterol Sulfate 3 mg nebulizer if greater than 1 year of age and more significant respiratory distress, and may repeat one time;

10. Consider CPAP - in patients > 18 y/o without Asthma- Recall that CPAP should never take the place of bronchodilators and should be used only after or in concert with inhaled bronchodilators in patients with acute bronchospasm.

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11. Contact OLMC for the following OPTIONS:

- a. Repeated or continuous Albuterol by nebulization or inhaler.
  - b. Methylprednisolone 125 mg IV x 1 dose
  - c. For Asthma Only - Pediatric: < 30 kg, 0.15 mg IM (0.15 ml of 1:1,000), > 30 kg, 0.30 mg IM (0.3 ml of 1:1,000) in anterolateral thigh
  - d. For Asthma Only - Adult – Epinephrine 0.3 mg IM of 1:1,000 solution every 20 minutes
-

## **PULMONARY EDEMA**

**(without shock)**

**Do not give nitroglycerin if patient has taken erectile dysfunction medication within the past 72 hours. Contact OLMC for options in patients who have taken such medicines.**

If initial systolic BP less than 100 mm Hg, "See Red 17, Cardiogenic Shock".

### **BASIC**

1. O<sub>2</sub> as appropriate. Assist ventilations (PPV) if needed.
2. Assess for shock. If BP greater than 100 mm Hg, place in sitting position.
3. Request ALS if available

### **INTERMEDIATE**

4. Cardiac monitor
5. IV en route
6. Manage airway as needed "See Blue 3 & 4"

- 
7. Contact OLMC for administration of nitroglycerin 0.4 mg or 1 spray SL. Repeat nitroglycerin at 2 minute intervals if systolic BP greater than 100 mm Hg. After initiation of SL nitroglycerin, may place 1 inch of nitroglycerine ointment 2% to the chest wall if BP greater than 110 mm Hg and remove nitroglycerine ointment 2% if BP less than 95 mm Hg. If patient has had nitroglycerin before and no IV established, and systolic BP greater than 100 mm Hg, then OK to give nitroglycerin. Do not administer nitroglycerin if patient has taken erectile dysfunction medication within the past 72 hours.

- 
8. Consider use of CPAP

### **CRITICAL CARE / PARAMEDIC**

9. Nitroglycerin 0.4 mg or 1 spray SL. Repeat nitroglycerin at 2 minute intervals if systolic BP greater than 100 mm Hg. After initiation of SL nitroglycerin, may place 1 inch of nitroglycerine ointment 2% to the chest wall if BP greater than 110 mm Hg and remove nitroglycerine ointment 2% if BP less than 95 mm Hg. If patient has had nitroglycerin before and no IV established, and systolic BP greater than 100 mm Hg, then OK to give nitroglycerin. Do not administer nitroglycerin if patient has taken erectile dysfunction medication within the past 72 hours.
10. Consider use of CPAP

## Red (Cardiac) Summary of Changes

Location of Change (in this document)	Change	Purpose of Change	Expected Impact
Page 40	Added – Chest Pain General Protocol	MDPB members were interested in offering pain management to patients with chest pain and who are low risk for acute coronary syndrome (no STEMI on 12 lead and alternate, obvious cause of pain). This “Chest Pain – General Protocol” reaffirms the importance of a 12 lead and evaluation for STEMI.	Educational
Page 42	Changed - Cardiac monitor and 12 lead EKG if <b>so trained</b> (see Red 4)	National Standard of EMS Practice will change in the future to NOT include cardiac monitoring and 12 lead acquisition at the Intermediate level. These national changes do not reflect the investment made by Maine EMS, Maine EMS Services, and hospitals over the last 6 years to make 12 leads widespread across the state.	Minimal
Page 42/43	Added – ASA 324mg PO as quality target in the Chest Pain – Suspected Cardiac Protocol	The MDPB wants to be deliberate in defining the elements of care that will become quality targets for prehospital and hospital providers. Provision of 324 mg of ASA and acquisition of a 12 lead within 10 minutes of patient contact are the 2 quality markers placed in the cardiac section	Educational
Page 42	Added – Paramedic – 12 Lead acquisition within 10 minutes of patient contact as quality marker		Educational
Page 42/43	Deleted – “Do not administer nitroglycerin if patient has taken	Redundant, as this statement in in bold at the top of the protocol	None Expected

	erectile dysfunction medications within past 72 hours.”		
Page 43	<b>Deleted</b> – “Paramedic Only: If no CHF and BP greater than 140 systolic & HR greater than 100 beats/min, then Metoprolol (Lopressor) 5mg IV over 5 minutes X 1 for target HR 70 – 80 beats/min. Call OLMC for option of repeating this once or twice more.”	While previously widely used in the patient with chest pain of suspected cardiac etiology, the “ACA/AHA 2007 Guidelines for the Management of Patients with Unstable Angina/Non-ST-Elevation Myocardial Infarction: Executive Summary” discouraged widespread early use of beta blockers, instead highlighting their importance within the first 24 hours of patient care.	Educational
Page 44	<b>Changed</b> – “Treat Underlying Arrhythmia” to “If patient develops dysrhythmia, refer to appropriate protocol. Recall, inferior MI’s and right sided MI’s in particular are commonly associated with bradycardia and blocks. Be wary of these dysrhythmias and refer to appropriate protocol. “	Clarify intention of the prior protocol	Educational – expected to be minimal
Page 45	Added – “STEMI Protocol”	STEMI Care has been a priority of MEMS in the last 2 protocol revisions. This is intended to offer additional insight to providers including 12 lead identification of STEMI. While mostly educational, this was felt valuable in addition to the protocol	Educational
Page 47	Addition of “Chest Pain	MDPB members were interested	Educational

	of Uncertain Etiology” Protocol	in creating options for the provision of pain control in patients without evidence of STEMI on 12 lead and who are extremely low risk for ACS as an etiology of their chest pain	
Page 48	<b>Changed</b> - “Acquisition of a 12-lead EKG should be done in all patients with chest pain or a potential cardiac complaint/diagnosis such as syncope or shortness of breath and responders must have a high index of suspicion in elderly patients” to “Given the frequency of atypical presentation in the elderly, responders must have a high index of suspicion in elderly patients.”	Clarity/Flow	None expected
Page 50 – 51	Added – Termination of Resuscitation Protocol	Clarify the circumstances in which resuscitative efforts can be terminated in the OHCA patient.	Educational
NOTE TO REVIEWERS – The MDPB has purposely NOT made any changed to the arrhythmia section as the AHA protocols are expected later in 2010 and our changes will reflect the AHA’s revisions			
Page 61 – In the 2008 protocol revision, the MDPB added OLMC option for rate control in Afib/Flutter with Metoprolol. As metoprolol is being removed from the Chest Pain Protocol, this opened discussion on use of alternate medications for rate control. Unfortunately, calcium channel blockers such as Diltiazem require refrigeration making this medication operationally difficult for EMS Services.			
Page 65	Added – Syncope Protocol	A common complaint in Emergency Medicine and EMS, the Maine EMS protocols had not covered Syncope in the past. This is an attempt to align with the NEMSIS and add a valuable protocol for a relatively common complaint.	Educational

	Removed PVC Protocol	MDPB felt as if the listed medical therapies for PVC's were overly aggressive making the protocol unnecessary	Educational
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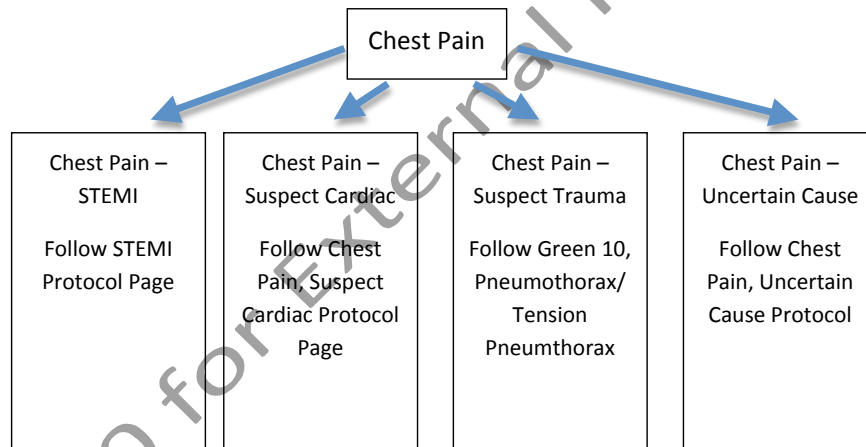
Draft 4.0 for External Review ONLY

## CHEST PAIN – GENERAL

For all patients with chest pain, evaluation for acute coronary syndromes should occur. Commonly, it is difficult with the tools available to EMS providers to completely rule out a cardiac cause of chest pain. All patients therefore should be transported for Emergency Medical evaluation. Cardiac disease is but one of the many causes of chest pain and the EMS provider should consider various causes to include, but not limited to the following (pulmonary embolism, esophageal, chest wall, spontaneous pneumothorax, etc). Patients commonly fall into one of four categories; STEMI, suspected cardiac, suspected trauma, or uncertain cause of chest pain.

user 11/1/10 11:05 AM

**Comment:** Need Page Notations for each of the following algorithms





**CHEST PAIN**  
**(Suspected cardiac origin)**

**Do not give nitro if patient has taken erectile dysfunction medications within the past 72 hours. Contact OLMC for options in patients who have taken such medicines.**

**BASIC**

1. O<sub>2</sub> – as appropriate
  2. Treat for shock if indicated
  3. Request ALS if available
  4. If patient has not taken an aspirin and has no allergy to aspirin: administer chewable aspirin 324 mg PO, if not contraindicated by allergy, bleeding/anticoagulant history, or ulcer disease. ALS back-up still mandatory despite use of aspirin.
- 
5. For EMT-Basic level providers – Contact OLMC for the OPTION of assisting with the administration of patient's own nitroglycerin

**INTERMEDIATE**

6. IV en route
  7. Cardiac monitor and 12 lead EKG if so trained (see Red 4)
  8. Chewable aspirin, 324 mg PO, if not contraindicated by aspirin allergy, bleeding/anticoagulant history, or ulcer disease
- 
9. Contact OLMC for administration of:
    - a. Nitroglycerin 0.4 mg SL or 1 spray, SL. May repeat two times at 5 minute intervals if BP greater than 100 mm Hg. If patient has had nitroglycerin before and no IV established, and systolic BP greater than 100 mm Hg, then OK to give nitroglycerin.

The EMT-I, in consultation with OLMC, may modify the Paramedic response as appropriate.

**CRITICAL CARE / PARAMEDIC**

10. Obtain 12 lead EKG (within first 10 minutes of patient contact)
11. Nitroglycerin 0.4 mg SL or 1 spray, SL. May repeat two times at 5 minute intervals if BP greater than 100 mm Hg. If patient has had nitroglycerin before and no IV established, and systolic BP greater than 100 mm Hg, then OK to give nitroglycerin.

12. Chewable aspirin, 324 mg PO, if not contraindicated by aspirin allergy, bleeding/anticoagulant history, or ulcer disease

---

13. Contact OLMC for OPTIONS:

b. Additional nitroglycerin

c. Fentanyl 1 microgram/kg IV or IM to a maximum dose of 100 micrograms

---

14. If patient develops dysrhythmia, refer to appropriate protocol. Recall, inferior MI's and right sided MI's in particular are commonly associated with bradycardia and blocks. Be wary of these dysrhythmias and refer to appropriate protocol.

## ST Elevation Myocardial Infarction (STEMI) Protocol

Acute Coronary Syndrome (ACS) is defined as patients presenting with angina or anginal equivalents such as chest, epigastric, arm or jaw pain or discomfort and may be associated with diaphoresis, nausea or shortness of breath.

### Inclusion Criteria:

Patient with symptoms consistent with Acute Coronary Syndrome and has one of the following in a diagnostic quality EKG:

1. Anterior, Inferior, or Lateral MI: ST elevation greater than 1 mm in two or more contiguous leads **AND** QRS complex is narrower than 0.12 (3 small boxes) seconds (if wider than 0.12 you are unable to diagnose as STEMI)
2. Posterior MI: ST depression greater than 1 mm in V1 and V2 with an R/S ratio of greater than or equal to 1 **AND** QRS complex is narrower than 0.12 (3 small boxes) seconds **OR** ST segment elevation in leads V8/V9
3. NEW LEFT Bundle Branch Block: If patient as in his/her possession a previous EKG with narrow QRS to demonstrate that the wide complex is a new change.

Detection of right ventricular and posterior wall infarction is important as approximately 40% of patients with Posterior/Inferior MI's are predisposed to more complications and higher mortality.

### TREATMENT:

1. **Basic / Intermediate:** Follow Chest Pain protocol
2. **Critical Care / Paramedic only:** Follow chest pain protocol for nitrates, aspirin and pain management. Obtain EKG within 10 minutes of first contact.
3. If patient meets above STEMI criteria, contact OLMC at receiving hospital (local hospital notification) and alert the receiving facility of impending arrival.
4. If the patient meets one of the above condition sets for STEMI inclusion criteria refer to local or regional cardiac systems of care for destination decision support
5. Patients who present with inferior MI, clear lung sounds, and BP < 90, give a fluid bolus of 250-500 ml of NS. For additional bolus, contact OLMC

## CHEST PAIN CHECKLIST

For chest pain of suspected cardiac origin, initiate therapy per protocol "Red 1 and 2", including the early use of aspirin and nitroglycerin if not contraindicated.

Use the Chest Pain Checklist or local equivalent if available. Report the information as soon as practical to the receiving ED.

- |  |            |           |
|--|------------|-----------|
| 1. Is systolic BP less than 180 mm Hg?   | <b>YES</b> | <b>NO</b> |
| 2. Is diastolic BP less than 100 mm Hg   | <b>YES</b> | <b>NO</b> |
| 3. Has pain persisted for greater than 15 minutes?                             | <b>YES</b> | <b>NO</b> |
| <hr/>  |            |           |
| 4. CVA or other serious central nervous system problems in preceding 6 months? | <b>YES</b> | <b>NO</b> |
| 5. Surgery or major trauma in preceding 2 weeks?                               | <b>YES</b> | <b>NO</b> |
| 6. Any bleeding problems? (e.g. ulcers, hemophilia)                            | <b>YES</b> | <b>NO</b> |
| 7. Pregnant?   | <b>YES</b> | <b>NO</b> |

You may copy and use this page as your checklist, or you may use a check-list recommended by your usual receiving hospital which contains at least these questions.

## CHEST PAIN – UNCERTAIN ETIOLOGY

For ALL patients with chest pain, consider the possibility of cardiac disease no matter what the history and physical suggest, however there are other sources of non cardiac chest pain to consider (Pulmonary embolism, esophageal, chest wall, spontaneous pneumothorax, etc)

If trauma suspected, refer to Green 10: Tension pneumothorax

### BASIC:

1. Administer O2 as appropriate
2. Transport in position of comfort
3. REQUEST ALS

### INTERMEDIATE:

4. Establish IV at TKO AND REQUEST PARAMEDIC
5. Perform 12 Lead EKG (If so trained)

The EMT-I, in consultation with OLMC, may modify the Paramedic response as appropriate.

### CRITICAL CARE/PARAMEDIC

6. Perform 12 lead EKG
7. IF 12 lead indicates STEMI, refer to STEMI protocol
8. For non traumatic chest pain in a stable patient with a normal level of consciousness and no evidence of STEMI or Acute Coronary Syndrome, CONTACT OLMC TO CONSIDER DEVIATION FROM “CHEST PAIN-SUSPECTED CARDIAC PROTOCOL” AND FOR THE FOLLOWING OPTIONS:
  - A. If appropriate: administration of fentanyl 1mcg/kg IV
    - a. Contact OLMC for dosage questions, or in patients such as pediatrics, abnormal VS, coincident drug use (including alcohol, cocaine, methamphetamine) or if IV cannot be established.
  - B. For nausea or vomiting, administer Ondansetron (Zofran) 4 mg IV and may repeat once after 15 minutes if needed. Contact OLMC for dosage questions, or in patients such as pediatrics

## **GUIDELINES TO THE PREHOSPITAL USE OF 12 LEAD EKG BY THE ALS PROVIDER**

1. Prehospital 12-lead EKG is now a standard of care for increasing diagnostic information regarding the chest pain/cardiac patient.
2. Acquisition of a 12-lead EKG should be done in all patients with chest pain or a potential cardiac complaint/diagnosis such as syncope or shortness of breath. Given the frequency of atypical presentation in the elderly, responders must have a high index of suspicion in elderly patients.
3. Transmission of 12-lead EKG or presentation of pre-hospital 12-lead EKG to treating personnel at the receiving ED is intended to augment patient triage and facilitate rapid identification of a potential thrombolytic or PTCA candidate.
4. In the case of STEMI, notify receiving ED immediately.

**Intermediate and Use of 12 Leads:** The purpose of this is to get baseline data ASAP and acquire 12 lead EKG if available

1. If trained, place 12 lead stickers and acquire 12 lead EKG
2. This is intended to have Intermediate present this to the Paramedics or receiving facilities
3. This must not modify the ALS response

### BASIC

1. O<sub>2</sub> as appropriate. Ventilate if patient is in respiratory arrest.
2. **CPR for 2 minutes minimum if unwitnessed cardiac arrest and until AED available for witnessed arrests.**
3. Attach AED if cardiac arrest. Do not withhold CPR while waiting for defibrillation equipment.
4. Request ALS if available.

### INTERMEDIATE / CRITICAL CARE / PARAMEDIC

5. Cardiac monitor and treat arrhythmias following the appropriate algorithm and your training and level of licensure.
  - a. Ventricular Fibrillation "Red 6"
  - b. Wide Complex Tachycardia "Red 8"
  - c. Asystole "Red 12"
  - d. Pulseless Electrical Activity "Red 11"
  - e. Bradycardia "Red 13"
  - f. Narrow Complex Tachycardia "Red 15"
  - g. Premature Ventricular Ectopy (PVCs) "Red 16"
6. Manage airway as needed, "See Blue 3 & 4," and establish IV (Intermediates en route), per specific arrhythmia protocol.

**Note:** The algorithms for cardiac arrest or arrhythmias in the following pages reflect the MEMS Medical Direction and Practice Board's interpretation of ACLS guidelines, as they should be used in the prehospital setting.

## TERMINATION OF RESUSITATION

Resuscitation should be terminated under the following circumstances:

### **Unwitnessed Arrest:**

1. When the patient regains pulse / respiration
2. When the patient is in asystole or unresponsive to Advanced Cardiac Life Support efforts for > 20 minutes.
3. When irreversible signs of death, such as dependent lividity, pupils fixed and dilated, palpable hypothermia (not from exposure) and no audible heart sounds are noted in patient with unknown downtime or downtime > 20 minutes.
4. When the rescuers are physically exhausted or when equally or more highly trained health care personal take over
5. When it is found that the patient has a DNR order or POLST form.
6. Continue resuscitation if conditions on scene are NOT amenable to cessation of resuscitation
7. Continuation of resuscitation beyond these protocols must be in consultation with OLMC\*

### **Witnessed arrest:**

1. When the patient regains pulse/ respiration
2. When the patient is in asystole or unresponsive to ACLS protocols performed by Critical Care EMT/ Paramedic for >20 minutes.
3. In the absence of ALS, when the same Maine EMS licensed crewmember has documented the absence of all vital signs for 20 minutes, in spite of BLS, except in the case of hypothermia.
4. When the rescuers are physically exhausted or when equally or more highly trained health care personal take over.
5. When it is found that the patient has a DNR or POLST form.
6. Continue resuscitation if conditions on scene are NOT amenable to cessation of resuscitation
7. Continuation of resuscitation beyond these protocols must be in consultation with OLMC\*

If Resuscitative Efforts are Terminated:

1. Focus attention on the family or bystanders. Explain the rationale for termination.
2. Consider accessing support for family members to potentially include other family, friends, or social support such as clergy.



3. If termination of resuscitation occurs, one must consider management of patient remains. No one option is correct for all circumstances and factors on scene will likely dictate the best option. Refer to Grey 5. If questions remain regarding disposition of the patient's remains, refer to OLMC.

\* Patients who do not respond to 20 minutes of EMS care do not survive neurologically intact to hospital discharge. It is dangerous to crew, pedestrians and other motorists to attempt to resuscitate a patient during ambulance transport. If circumstances do not allow termination of resuscitation for safety or other reasons, notify OLMC.

**BASIC**

- 1) Check Pulse, if no pulse then:
  - a. CPR until AED is available
  - b. Analyze with AED, follow AED instructions\*
  - c. If severe Hypothermia, go to Yellow 11
  - d. Manage Airway\*\*
- 2) 5 Cycles of CPR and then reassess with AED check
- 3) Request ALS if available
- 4) Refer to Termination of Resuscitation protocol as necessary

**INTERMEDIATE**

- 5) Continue cycle of CPR if no pulse (5 cycles), followed by pulse and AED/manual defibrillator check—defibrillate as indicated
- 6) Manage Airway\*\*
- 7) Establish IV/IO enroute
- 8) Call for Critical Care/Paramedic Back-up/Intercept and contact OLMC
- 9) Refer to Termination of Resuscitation protocol as necessary

**CRITICAL CARE / PARAMEDIC**

- 10) Precordial thump if witnessed arrest
- 11) Continue CPR if no pulse—after 5 cycles of CPR, do rhythm and pulse checks and consider next intervention listed in order—do one medication intervention at each 5 cycle re-assessment
- 12) Rhythm Check
  - a. If VF or pulseless VT, then defibrillate X 1 at 360 J or equivalent biphasic
- 13) Manage Airway\*\*
- 14) Establish IV/IO
- 15) Epinephrine 1:10,000 1 mg IV/IO Push—repeat every 3-5 minutes
- 16) Give 5 cycles of CPR, then do rhythm and pulse checks – defibrillate X 1 at 360J or equivalent biphasic if VF or VT
- 17) Amiodarone 300 mg IV/IO push, then consider additional 150 mg IV/IO one time
- 18) Give 5 cycles of CPR, then do rhythm and pulse checks – defibrillate X 1 at 360J or equivalent biphasic if VF or VT
- 19) Consider Magnesium 1-2 grams IV/IO push

- 20) Give 5 cycles of CPR, then do rhythm and pulse checks – defibrillate X 1 at 360J or equivalent biphasic if VF or VT
- 21) Contact OLMC for OPTION of Sodium Bicarbonate and orders on continuing ACLS or termination of resuscitation.
- 22) Upon successful conversion from V-Tach or V-fib (if no 2<sup>nd</sup> degree Type II AV block or 3<sup>rd</sup> degree AV block is present) contact OLMC for options of:
  - a. Amiodarone bolus
  - b. Amiodarone drip
- 23) Refer to Termination of Resuscitation protocol as necessary

\*If return of spontaneous circulation (ROSC) is established, contact OLMC and follow appropriate protocol for patient rhythm

\*\*See Airway Algorithm Protocol: Blue 3 and 4

## WIDE COMPLEX TACHYCARDIA (PROBABLE V-Tach)

If no pulse, treat as V-Fib/Pulseless V-Tach—See Red 6

### Pulse is Present

<p><b>A)</b> BP is greater than 100 mm Hg and patient is Alert and Comfortable</p> <p><b>BASIC</b></p> <ol style="list-style-type: none"><li>1) Oxygen via non-rebreather Mask</li><li>2) Request ALS if available</li></ol> <p><b>INTERMEDIATE</b></p> <ol style="list-style-type: none"><li>3) Establish IV/IO;</li><li>4) Request Critical Care/Paramedic Back-up/Intercept, Contact OLMC</li></ol> <p><b>CRITICAL CARE / PARAMEDIC</b></p> <ol style="list-style-type: none"><li>5) Amiodarone 150 mg with 50 ml D<sub>5</sub>W IV/IO infused over 10 minutes</li><li>6) Repeat Amiodarone 150 mg IV/IO over 10 minutes if needed</li><li>7) DC Cardioversion if unstable at any time</li><li>8) Contact OLMC for further ACLS Options</li></ol>	<p><b>B)</b> BP is less than 100 mm Hg or patient has Chest Pain or Shortness of Breath or altered Level of Consciousness</p> <p><b>BASIC</b></p> <ol style="list-style-type: none"><li>1) Oxygen via non-rebreather mask</li><li>2) Request ALS if available</li></ol> <p><b>INTERMEDIATE</b></p> <ol style="list-style-type: none"><li>3) Establish IV/IO</li><li>4) Request Critical Care/Paramedic Back-up, Contact OLMC</li></ol> <p><b>CRITICAL CARE / PARAMEDIC</b></p> <ol style="list-style-type: none"><li>5) Contact OLMC for OPTION of:<ol style="list-style-type: none"><li>a. Adult: Midazolam (Versed) 3 mg IV/IO;</li><li>b. Fentanyl 1 µg/kg IV/IO to a maximum of 100 µg initial dose</li><li>c. Synchronized Cardioversion (see Gray 20)</li></ol></li><li>6) If this fails, consider defibrillation X 1 at 360 J or equivalent biphasic</li><li>7) Contact OLMC for further ACLS Options</li></ol>	<p><b>C)</b> Patient is unconscious and BP less than 100 mm Hg or patient is unconscious with pulmonary edema</p> <p><b>BASIC</b></p> <ol style="list-style-type: none"><li>1) Oxygen via non-rebreather mask or Bag-Valve mask</li><li>2) Request ALS if available</li></ol> <p><b>INTERMEDIATE</b></p> <ol style="list-style-type: none"><li>3) AED or Manually Defibrillate X1 at 360J or biphasic equivalent</li><li>4) Request Critical Care/Paramedic Back-up, Contact OLMC</li></ol> <p><b>CRITICAL CARE / PARAMEDIC</b></p> <ol style="list-style-type: none"><li>5) Defibrillate X 1 360 J or equivalent biphasic</li><li>6) Manage Airway</li><li>7) IV/IO</li><li>8) Contact OLMC for further ACLS Options</li></ol>
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**For Polymorphic Ventricular Tachycardia or Torsades:** Contact OLMC and Consider Magnesium Sulfate 1-2 grams IV over 5 minutes

user 10/18/10 11:07 AM

**Comment:** NOTE TO REVIEWERS - The MDPB has purposely NOT made any changes to the arrhythmia section as the AHA protocols are expected later in 2010 and our changes will reflect the AHA's revisions

## ASYSTOLE

Should be confirmed in two leads. If rhythm is unclear and possible ventricular fibrillation (VF), then treat as VF.

### BASIC

- 1) Check Pulse, if no pulse then:
  - a. CPR until AED is available
  - b. Analyze with AED, follow AED instructions
    - a. If severe Hypothermia, go to Yellow 11
    - b. Manage Airway\*
- 2) 5 Cycles of CPR and then reassess with pulse check and AED check
- 3) Request ALS if available

### INTERMEDIATE

- 4) Continue cycle of CPR if no pulse (5 cycles), followed by pulse and AED/manual defibrillator check
- 5) Manage Airway\*
- 6) Establish IV/IO enroute
- 7) Call for Critical Care/Paramedic Back-up/Intercept and contact OLMC
- 8) Refer to Termination of Resuscitation protocol as necessary

### CRITICAL CARE / PARAMEDIC

- 9) Continue CPR if no pulse—after 5 cycles of CPR, do rhythm and pulse checks and consider next intervention listed in order—do one medication intervention at each 5 cycle re-assessment
- 10) Rhythm Check—consider external pacing for witnessed onset of asystole
- 11) Manage Airway\*
- 12) Establish IV/IO and consider treatable causes: Hypoxia, Hyperkalemia, Hypokalemia, Pre-existing Acidosis, Drug Overdose, Hypothermia.
- 13) Epinephrine 1:10,000 1 mg IV/IO Push—repeat every 3-5 minutes
- 14) Give 5 cycles of CPR, then do rhythm and pulse checks
- 15) Atropine 1 mg IV/IO repeat every 3-5 minutes to maximum dose 0.04 mg/kg
- 16) Give 5 cycles of CPR, then do rhythm and pulse checks
- 24) Contact OLMC for OPTION of Sodium Bicarbonate and orders on continuing ACLS or termination of resuscitation\*\*.
- 25) Refer to Termination of Resuscitation protocol as necessary

user 10/18/10 11:07 AM

**Comment:** NOTE TO REVIEWERS - The MDPB has purposely NOT made any change to the arrhythmia section as the AHA protocols are expected later in 2010 and our changes will reflect the AHA's revisions

\*See Airway Algorithm Protocol: Blue 3 and 4

\*\*Consider termination of efforts for unknown down time, irreversible signs of death, no response after 10 minutes of efforts, or unwitnessed arrest event.

**PEA INCLUDES:**

Electromechanical Dissociation (EMD)

Pseudo-EMD

Idioventricular Rhythms

Ventricular Escape Rhythms

Brady-Asystolic Rhythm

Post Defibrillation Idioventricular Rhythms

**BASIC**

- 1) Check Pulse, if no pulse then:
  - a. CPR until AED is available
  - b. Analyze with AED, follow AED instructions
  - c. If severe Hypothermia, go to Yellow 11
  - d. Manage Airway\*
- 2) 5 Cycles of CPR and then reassess with pulse check and AED check
- 3) Request ALS if available

**INTERMEDIATE**

- 4) Continue cycle of CPR if no pulse (5 cycles), followed by pulse and AED/manual defibrillator check
- 5) Manage Airway\*
- 6) Establish IV/IO enroute, and give IV normal saline wide open
- 7) Call for Critical Care/Paramedic Back-up/Intercept and contact OLMC

**CRITICAL CARE / PARAMEDIC**

- 8) Continue CPR if no pulse—after 5 cycles of CPR, do rhythm and pulse checks and consider next intervention listed in order—do one medication intervention at each 5 cycle re-assessment
- 9) Manage Airway\*
- 10) Establish IV/IO and consider treatable causes: Massive Acute Myocardial Infarction; Hypovolemia; Cardiac Tamponade; Tension Pneumothorax; Massive Pulmonary Embolus; Hypoxia; Hyperkalemia; Hypokalemia; Acidosis; Hypothermia and Drug Overdoses such as tricyclics, digitalis, beta blockers and calcium channel blockers.
- 11) Epinephrine 1:10,000 1 mg IV/IO Push—repeat every 3-5 minutes
- 12) Give 5 cycles of CPR, then do rhythm and pulse checks
- 13) If HR less than 60 beats per minute, then Atropine 1 mg IV/IO repeat every 3-5 minutes to maximum dose 0.04 mg/kg
- 14) Give 5 cycles of CPR, then do rhythm and pulse checks
- 15) Refer to Termination of Resuscitation protocol as necessary — consider termination of efforts for unknown down time, irreversible signs of death, no response after 10 minutes of efforts, or unwitnessed arrest event.

\*See Airway Algorithm Protocol: Blue 3 and 4



## **BRADYCARDIA**

(Heart Rate less than 60 beats per minute)

user 10/18/10 11:07 AM

**Comment:** NOTE TO REVIEWERS - The MDPB has purposely NOT made any changes to the arrhythmia section as the AHA protocols are expected later in 2010 and our changes will reflect the AHA's revisions

*Concerning Signs or Symptoms:* Blood pressure less than 100 mm Hg, premature ventricular contractions, altered mental status, syncope/pre-syncope, chest pain, dyspnea, or cyanosis/pallor.

A) If NO concerning Signs or Symptoms, then all levels (Basic/Intermediate/Critical Care/Paramedic) may do the following:

- 1) O<sub>2</sub> as appropriate

B) If ANY concerning signs or symptoms, then:

### **BASIC**

- 1) O<sub>2</sub> as appropriate
- 2) Request ALS if available

### **INTERMEDIATE**

- 3) IV en route
- 4) Cardiac monitor
- 5) Call for Critical Care/Paramedic Back-up/Intercept

### **CRITICAL CARE / PARAMEDIC**

- 6) Atropine 0.5 to 1 mg IV/IO\*,\*\*; give in repeat doses every 3-5 minutes up to a maximum dose of 0.04 mg/kg\*\*
- 7) Apply external pacer—Initiate Transcutaneous pacing (TCP) for patients who do not respond to Atropine; if serious signs or symptoms, do not delay TCP while awaiting IV/IO access or for Atropine to take effect. Consider premedicating with Midazolam (Versed) 3 mg IV/IO or Fentanyl 1 µg/kg IV/IO to a maximum first dose of 100 µg. Notify OLMC as soon as possible.
- 8) If continued Signs or symptoms, then contact OLMC for options of the following:
  - a. Repeat Atropine
  - b. Dopamine (800 mg in 500 ml, or premix). Titrate to maintain BP greater than 100 mm Hg (5 to 20 µg/kg/min)

NOTE: Application of TCP should be considered if deterioration is anticipated because of the following:

- a. Observed Sinus pauses
- b. Episodes of 2<sup>nd</sup> degree Type II, or 3<sup>rd</sup> degree AV Block.

\* Transplanted denervated hearts will not respond to Atropine. Proceed to pacing, catecholamine infusion, or both

\*\* Atropine should be used with caution in 2<sup>nd</sup> degree Type II AV block and new 3<sup>rd</sup> degree AV block with wide QRS complexes.

**Comment:** NOTE TO REVIEWERS - The MDPB has purposely NOT made any change to the arrhythmia section as the AHA protocols are expected later in 2010 and our changes will reflect the AHA's revisions

## BASIC

1. O<sub>2</sub> – as appropriate
2. Treat for shock if indicated
3. Request ALS if available

## INTERMEDIATE

4. IV en route
5. Cardiac monitor / 12 lead EKG – see Red 4
6. Call for Critical Care / Paramedic Back-up / Intercept

## CRITICAL CARE / PARAMEDIC

Contact OLMC for the Following Options:

Stable SVT unknown type or PSVT – If Unstable, go to here\*\*

- 1) Valsalva Maneuver
- 2) Adenosine 6 mg IV rapid bolus at centrally located peripheral IV with rapid saline bolus

### Persistent PSVT (Must call OLMC)

- 1) Adenosine 12 mg IV rapid bolus at centrally located peripheral IV with rapid saline
- 2) May repeat #1 after consult with OLMC

### Rate Control for A-fib or A-flutter (Paramedic only and Must Contact OLMC)

- 1) Metoprolol (Lopressor) 5 mg IV over 5 minutes; OR
- 2) Repeat of therapy only after consult with OLMC

**Comment:** Refer to discussion on Cardiac Protocol Changes Summary Page

\*\* If unstable narrow complex tachycardia, Contact OLMC: Cardioversion with first attempt at 50 Joules monophasic or monophasic equivalents if biphasic machine. Subsequent attempts if needed will progress to 100 Joules, then 200 Joules, then 300 Joules, then 360 Joules (monophasic or monophasic equivalents if biphasic machine). Consider premedication with Fentanyl 1 microgram/kg IV push to a maximum initial dose of 100 micrograms and/or Midazolam (Versed) 3 mg IV bolus. Have a running IV in place of NS or LR.

## CARDIOGENIC SHOCK

### BASIC

1. O<sub>2</sub> as appropriate
2. Request ALS if available

### INTERMEDIATE

3. Cardiac monitor
  4. IV en route
  5. Call for Critical Care / Paramedic Back-up / Intercept
- 
6. Contact OLMC with following information:  
vital signs, lung sounds, cardiac rhythm, pedal edema assessment for OPTION  
OF:  
A. Fluid challenge
- 

### CRITICAL CARE / PARAMEDIC

- 
7. Contact OLMC for the following OPTION:
    - a. Dopamine (800 mg in 500 ml or premix). Titrate to maintain systolic BP greater than 100 mm Hg
-

## SYNCOPE

### Basic:

- a. Obtain history (Seizure, stroke, fluid loss, palpitations, chest pain, dizzy, trauma)  
Consider Spinal immobilization if appropriate
- b. O2 as appropriate
- c. Obtain blood glucose if trained
- d. Orthostatic vital signs (Do not stand patients who are already hypotensive)
- e. Treat for shock if appropriate
- f. Request Paramedic if available

### Intermediate:

- g. Establish IV/IO
- h. Cardiac monitor and 12 lead EKG (if so trained)
- i. Fluid challenge if appropriate, 250ml over 10 minutes
- j. Obtain Blood Glucose – refer to Blood Glucose Protocol
- k. Request Paramedic if available

### Paramedic/Critical Care

10. Cardiac Monitor
11. Obtain Blood Glucose – refer to Blood Glucose Protocol
12. 12-lead EKG

**NOTE: At any time**, if relevant signs/symptoms found, go to appropriate protocol

All of these patients should be transported for emergency evaluation. More than 25% of geriatric syncope is cardiac dysrhythmia based. Consider other causes: GI Bleed, Ectopic Pregnancy, Seizure, Stroke, Hypoglycemia, Shock, Toxicologic (alcohol), Medications.

## Gold (General Medical) Summary of Changes

Location of Change (in this document)	Change	Purpose of Change	Expected Impact
Page 68	<b>Addition of the following to the severe anaphylaxis protocol for paramedic level of care:</b> Solumedrol 125 mg IV. Consider glucagon 1 mg IV q 5 minutes for patients taking beta-blockers	While steroids will have little effect in the pre-hospital setting, provision of this therapy early in the patient's disease process will decrease time to steroid effects. As well, this is a safe medication in this patient population. Addition of glucagon is to counter beta blockade in patients on beta blockers.	Educational
Page 69/70	Changed "If Shock Present, perform fluid challenge" to "If Shock present, refer to medical Shock Protocol"	Later in the Gold section, the MDPB has created a Medical Shock protocol to address causes of medical shock.	Educational
Page 69/70	Changed "Naloxone (Narcan) 0.1-2 mg IV,IO,IM or Intranasal (may opt to give 2 mg as starting dose if using intranasal route) only give if respirations less than 12 per minute and you suspect narcotic overdose, titrate to improve respiratory drive; patients abruptly fully awakened may become combative, or suffer acute narcotic withdrawal symptoms." to "If respirations less than 12 per minute AND narcotic overdose suspected a. Naloxone (Narcan) 0.1 - 2 mg IV, IO, IM or Intranasal (may opt to give 2 mg as starting dose if using intranasal route) titrate to improve respiratory	Clarity	Educational

	<p>drive, b. NOTE: patients abruptly fully awakened may become combative, or suffer acute narcotic withdrawal symptoms. Some drugs such as Propoxyphene, Talwin, or Methadone may require high doses. c. Once intubated, do not give naloxone</p>		
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Page 69/70	Removed Thiamine from the formulary	Most states have removed thiamine from the EMS formulary. Bledsoe = "Incidence of WE is rare (<0.2%). Although most WE pts have AMS, few present with coma, Cases of severe Anaphylaxis to IV thiamine have been reported. To fully reverse WE, Thiamine must be administer over a period of 3 days. <b>"•Thiamine has a very limited role in EMS and is probably a waste of resources."</b> NC/NH/PA all have removed.....	Educational
Page 71	Changed Glucagon from an OLMC option to a standing protocol in the face of inability to obtain IV	Make use of glucagon a standing protocol in situations where IV access is not obtainable	Education
Page 72	<b>Changed</b> "For patients with known diabetes and is able to swallow, give glucose orally" to <b>"If patient is a known diabetic, has a known low blood sugar, or has an altered mental status, and if the patient is conscious and able to swallow, give glucose orally"</b>	Clarity	Educational
Page 73/74	Amended Paramedic Diabetic Emergencies algorithm	1) Allow use of Glucagon in patients without IV (without OLMC). 2) Reinforce proper use of IO in the hypoglycemic patient.	Educational
Page 77	<b>Added "Note: Most seizures are self-limited. Unless a specific underlying condition exists (i.e. diabetes with hypoglycemia),</b>	Educational	Minimal



	<b>treatment of a seizure or multiple seizures with a total duration of less than 5 minutes should focus on patient protection and oxygenation”</b>		
Page 77	<b>Removed “Naloxone (Narcan) 0.1 – 2 mg IV, IV, IO, IM or Intranasal only give if respirations less than 12 per minute and you suspect narcotic overdose, titrate to improve respiratory drive; patients abruptly fully awakened may become combative, or suffer acute narcotic withdrawal symptoms. Some drugs such as Propoxyphene, Talwin, or Methadone may require high doses.</b>	The MDPB Felt as if this had little utility in the Seizure protocol	Educational
Page 76/77	Amended and revised the EMT-I and Paramedic Seizure protocols		
Page 78/79/80	Amended “Acute Stroke Protocol”	a) Standardize the assessment of stroke patients. b) Improve dialogue between EMS providers and Hospitals regarding the arrival of these patients. c) Adopt a standardized thrombolytic checklist.	Educational

## ALLERGY / ANAPHYLAXIS

### BASIC

1. O<sub>2</sub> as appropriate
2. If shock present, treat
3. Request ALS if available
4. Consider local measures to prevent absorption

- 
5. Contact OLMC
    - a. Assist administration of patient's own anaphylaxis kit
    - b. Administer an adult or pediatric (as applicable) Epinephrine Autoinjector if the service is authorized and the personnel so trained

### INTERMEDIATE

6. IV en route
7. Cardiac monitor
8. If shock present, perform fluid challenge

- 
9. Contact OLMC for OPTION of administration of Epinephrine 0.3 mg, 1:1,000 IM in anterolateral thigh
  10. Contact OLMC for Option of Pediatric dose of Epinephrine which is as follows: < 30 kg, 0.15 mg IM (0.15 ml of 1:1,000), > 30 kg, 0.3 mg IM (0.3 ml of 1:1,000) IM in anterolateral thigh

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EMT-I, in consultation with OLMC, may modify the Paramedic response as appropriate.

### CRITICAL CARE / PARAMEDIC

11. Manage airway as needed "See Blue 3, 4 & 5"
12. Epinephrine:
  - i. Adult: 0.3 mg (0.3 ml of 1:1,000) IM in anterolateral thigh
  - ii. Pediatric: < 30 kg, 0.15 mg IM (0.15 ml of 1:1,000), > 30 kg, 0.30 mg IM (0.3 ml of 1:1,000) in anterolateral thigh
13. Diphenhydramine (Benadryl)
  - i. Adult: 25-50 mg IV/IO/IM
  - ii. Pediatric: 1-2 mg/kg IV/IO/IM
14. Albuterol 2.5 mg by nebulization; Consider repeat times 1 as needed or nebulizer of 5 ml of 1:1,000 Epinephrine
15. Methylprednisolone (Solu-Medrol):

- i. Adult: 125 mg IV
- ii. Pediatric: 2mg/kg IV
- b. Consider glucagon 1 mg IV q 5 minutes for patients taking beta-blockers

---

Contact OLMC for repeat options and/or IV dosing of epinephrine for shock or cardiovascular collapse which may typically be dosed the following way: 0.5 to 1 ml of Epinephrine 1:10,000 (0.1 mg) IV, pushed over one minute, repeated, as needed, in 10 to 20 minutes.

## **ADULT COMA**

### **(Decreased Level of Consciousness)**

**(Assess for trauma, drugs, diabetes, breath odor, needle tracks, medical alert tags suspected seizure). Refer to appropriate protocol for specific suspected conditions.**

#### **BASIC**

1. Immobilize spine if indicated
2. O<sub>2</sub> and assist ventilation if needed
3. Request ALS if available
4. If shock present, refer to medical shock protocol
5. Option to perform finger stick to measure blood glucose using MEMS approved technique/device limited to providers who have completed the MEMS BG monitoring training program

#### **INTERMEDIATE**

6. Manage airway as needed "See Blue 3 & 4"
7. IV en route
8. Draw blood as IV established or do finger stick, to measure blood glucose using MEMS approved technique/device
9. Cardiac monitor
10. If shock present, refer to medical shock protocol

- 
11. Contact OLMC for the following OPTIONS:
    - a. If blood glucose less than 80 mg/dL administer Dextrose 25 gm (50 ml of 50% solution IV or 250 ml of 10% solution IV)
  12. If respirations less than 12 per minute AND narcotic overdose suspected
    - a. Naloxone (Narcan) 0.1 – 2 mg IV, IO, IM or Intranasal (may opt to give 2 mg as starting dose if using intranasal route) titrate to improve respiratory drive
    - b. NOTE: patients abruptly fully awakened may become combative, or suffer acute narcotic withdrawal symptoms. Some drugs such as Propoxyphene, Talwin, or Methadone may require high doses.
    - c. Once intubated, do not give naloxone

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#### **CRITICAL CARE / PARAMEDIC**

13. Administer the following:

- a. If blood glucose less than 80 mg/dL administer Dextrose 25 gm (50 ml of 50% solution IV or 250 ml of 10% solution IV)
- b. If unable to establish IV: Glucagon 1 mg, IM
- 14. If respirations less than 12 per minute AND narcotic overdose suspected
  - a. Naloxone (Narcan) 0.1 – 2 mg IV, IO, IM or Intranasal (may opt to give 2 mg as starting dose if using intranasal route) titrate to improve respiratory drive
  - b. NOTE: patients abruptly fully awakened may become combative, or suffer acute narcotic withdrawal symptoms. Some drugs such as Propoxyphene, Talwin, or Methadone may require high doses.
  - c. Once intubated, do not give naloxone
- 15. If shock present, refer to medical shock protocol

- 
- 16. Contact OLMC for the following OPTIONS:
    - a. Repeat Dextrose
    - b. Repeat bolus of Naloxone (*Narcan*) 0.1 – 2 mg IV, IO, or IM
-

**ADULT DIABETIC EMERGENCIES**  
**Pediatric Diabetic Emergencies "See Pink 10"**

**BASIC**

1. O<sub>2</sub> as appropriate
2. Request ALS if available
3. If patient is a known diabetic, has a known low blood sugar, or has an altered mental status, and if the patient is conscious and able to swallow, give glucose orally
4. Option to perform finger stick to measure blood glucose using MEMS approved technique/device limited to providers who have completed the MEMS BG monitoring training program

Glucose paste is to be administered as soon as possible in patients presenting with the signs/symptoms of diabetic emergency.

**INTERMEDIATE**

5. IV en route
  6. Draw blood as IV established or do finger stick to measure blood glucose using MEMS approved technique/device
  7. Cardiac monitor
- 
8. If blood glucose is less than 80 mg/dL,
    - a. If patient is conscious and able to swallow, give glucose orally
    - b. Contact OLMC for OPTION of administering Dextrose 25 gm (50 ml of 50% solution IV or 250 ml of 10% solution IV). Recheck blood glucose in 5 minutes.
  9. If blood glucose greater than 300 mg/dL, give 500 ml NS fluid challenge

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**CRITICAL CARE / PARAMEDIC**

10. Dextrose
  - a. If blood glucose less than 80 mg/dL administer Dextrose for adult coma and diabetic emergencies
    - i. If patient is conscious and able to swallow, give glucose orally.
    - ii. If patient unable to tolerate oral glucose, administer Dextrose 25 gm (50 ml of 50% solution or 250 ml of 10% solution) IV.
    - iii. If IV unavailable, DO NOT PLACE IO.
      1. Administer glucagon 1 mg IM

11. If blood glucose greater than 300 mg/dL, give 500 ml NS fluid challenge
12. Repeat glucose measurement in 5 minutes.

---

Contact OLMC for OPTION of repeating Dextrose, repeating Glucagon, or placing an IO

- a. If IO placed, administer 250 ml of D10W via IO.
-

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**ADULT SEIZURES**  
***Pediatric Seizures "See Pink 3"***

Note: Most seizures are self-limited. Unless a specific underlying condition exists (i.e. diabetes with hypoglycemia), treatment of a seizure or multiple seizures with a total duration of less than 5 minutes should focus on patient protection and oxygenation.

**BASIC**

1. O<sub>2</sub> as appropriate
2. Left lateral recumbent position and protect patient from injury
3. Spinal immobilization if indicated "See Green 6"
4. Request ALS if available
5. Option to perform finger stick to measure blood glucose using MEMS approved technique/device limited to providers who have completed the MEMS BG monitoring training program

**INTERMEDIATE**

6. Manage airway as needed "See Blue 3 & 4"
7. Cardiac monitor
8. IV en route
9. Draw blood as IV established or do finger stick, to measure blood glucose using MEMS approved technique/device

- 
10. Contact OLMC for the following OPTIONS:
    - a. If blood glucose less than 80 mg/dL
      - i. Contact OLMC for OPTION of administering Dextrose 25 gm (50 ml of 50% solution or 250 ml of 10% solution IV) IV.
        1. If IV unavailable DO NOT PLACE IO. Contact OLMC for option of IO.
        2. If IO placed, administer 250 ml of D10W via IO.
  11. Recheck blood glucose in 5 minutes.
  12. If shock present, refer to medical shock protocol

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**CRITICAL CARE / PARAMEDIC**

13. If blood glucose less than 80 mg/dL
  - a. If patient unable to tolerate oral glucose, administer Dextrose 25 gm (50 ml of 50% solution or 250 ml of 10% solution) IV.
  - b. If IV unavailable, DO NOT PLACE IO.

- i. Administer glucagon 1 mg IM
  - c. Recheck blood glucose in 5 minutes.
- 14. If the patient is actively seizing for at least 5 minutes
  - a. Midazolam (Versed) 3 mg IV / IO.
    - i. If IV or IO cannot be established, Midazolam (Versed) 5 mg IM.
- 15. For patients visibly pregnant or less than 2 weeks post partum
  - a. Magnesium Sulfate 4 gm IV / IO over 10 minutes
    - i. If IV/IO not available, Magnesium Sulfate 8 gm IM (4 gm in each buttock)

- 
- 16. Contact OLMC for the following OPTIONS:
    - a. If repeat of any of these options is necessary
-

## ACUTE STROKE

Stroke should be suspected if any of the following have appeared in the last few hours or days: weakness on one side of face, weakness in one arm or leg, abnormal speech (slurred, incoherent, absent).

**Refer to the next page for early hospital notification process for patients who are potential stroke patients.**

“See Gold 3 Adult Coma if warranted”

“See Gold 5 Diabetic Emergencies if warranted”

### BASIC

1. O2 as appropriate
2. Request ALS if available
3. Option to perform finger stick to measure blood glucose using MEMS approved technique/device limited to providers who have completed the MEMS BG monitoring training program.

### INTERMEDIATE

4. Manage airway as needed “See Blue 3 & 4”
5. Cardiac monitor
6. IV en route
7. Draw blood as IV established or do finger stick, to measure blood glucose using MEMS approved technique/device.
8. If blood glucose is less than 80 mg/dL,
  - a. Contact OLMC for OPTION of administering Dextrose 25 gm (50 ml of 50% solution or 250 ml of 10% solution) IV.
    - i. If IV unavailable DO NOT PLACE IO. Contact OLMC for option of IO.
      - A. If IO placed, administer 250 ml of D10W via IO

### CRITICAL CARE / PARAMEDIC

9. If blood glucose less than 80 mg/dL
  - a. If patient is conscious and able to swallow, give glucose orally
  - b. If patient unable to tolerate oral glucose, administer Dextrose 25 gm (50 ml of 50% solution or 250 ml of 10% solution) IV
  - c. If IV unavailable, DO NOT PLACE IO. Administer glucagon 1 mg IM
    - i. Contact OLMC for OPTION of repeating Dextrose, repeating Glucagon, or placing an IO

- A. If IO placed, administer 250 ml of D10W via IO.
- d. Recheck blood glucose in 5 minutes.

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## Acute Stroke

1. Perform the Cincinnati Prehospital Stroke Scale and assess mental status. If any element is abnormal, proceed to Step 2
  - a. Cincinnati Prehospital Stroke Scale:
    - i. **Speech:** Have pt. state "You can't teach an old dog new tricks"
      1. Abnormal = wrong word, slurred, or absent speech
    - ii. **Facial droop** when asked to show teeth or smile
      1. Abnormal = one side does not move as well as other
    - iii. **Motor:** Have patient close eyes and hold out both arms
      1. Abnormal = arm cannot move or drifts down when held out
  - b. Also assess **Level of Consciousness**
    - i. Abnormal = lethargic, stuporous, comatose
2. Determine blood glucose level. If it is greater than 80 mg/dL, proceed to Step 3.
  - a. Basic EMT's may only check blood glucose if they have completed the MEMS BG Monitoring Training program
  - b. If blood glucose is less than 80 mg/dL treat per MEMS protocols. Recheck the blood glucose in 5 minutes and, if it is greater than 80 mg/dL, repeat the Cincinnati Prehospital Stroke Score, If it is positive (1 or more positives) proceed to Step 3.
3. Determine time of "Last Seen Normal."
  - a. Get history from the patient and all available bystanders
  - b. "Time Last Seen Normal" starts with the onset of first symptoms or, if the symptoms improved or went away, the time the symptoms returned or got worse again.
  - c. Make sure to record contact information (cell phone, number etc.) for the individual able to identify the exact time when the patient was last asymptomatic
4. As early as possible, alert the receiving hospital of a "Code Stroke"
  - a. State: "This is XX ambulance. We are transporting a XX age XX (gender) patient who is a potential stroke patient. The deficit is XX. Time of onset is XX. Cincinnati Prehospital Stroke Scale is abnormal for XX of 3 elements. The patient's mental status is XX. Finger stick blood glucose is XX. Vitals signs are XX. ETA is XX. Do you have any further questions or orders?"

## Stroke Checklist

Time of symptom onset/Time Last Seen Normal: \_\_\_\_\_

Yes

No

- |                          |                          |  |
|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | History of intracranial hemorrhage?  |
| <input type="checkbox"/> | <input type="checkbox"/> | Known arteriovenous malformation, neoplasm, or aneurysm?   |
| <input type="checkbox"/> | <input type="checkbox"/> | Witnessed seizure at stroke onset?   |
| <input type="checkbox"/> | <input type="checkbox"/> | Active internal bleeding or acute trauma (fracture)?   |
| <input type="checkbox"/> | <input type="checkbox"/> | Intracranial or intraspinal surgery, serious head trauma, or previous stroke within the past 3 months? |
| <input type="checkbox"/> | <input type="checkbox"/> | Current use of Coumadin or received Heparin within the last 48 hours?                                  |
| <input type="checkbox"/> | <input type="checkbox"/> | Arterial puncture at a noncompressible site within past 7 days?  |

Adapted from - Anonymous. "Table 3: Fibrinolytic Checklist" from Part 9: Adult Stroke. *Circulation* 2005; IV:116.

## MEDICAL SHOCK

See "Red 17: Cardiogenic Shock" if appropriate

See "Green 13: Hypovolemic Shock" if appropriate

See "Gold 1: Allergy and Anaphylaxis" if appropriate

See "Blue 4: Adult Airway Algorithm" if appropriate

### Definition of Severe Inflammatory Response Syndrome (SIRS), Sepsis, Severe Sepsis and Septic Shock

Variable	Definition	
SIRS	Greater than or equal to 2 of the following	Temp > 38.3°C or < 36°C HR > 90 bpm Respiratory Rate > 20 bpm Hyperglycemia > 120 mg/dl <sup>1</sup> Altered Level of Consciousness Decreased Capillary Refill Lactate > 2 mmol/L
Sepsis	SIRS + a presumed or identified source of infection	
Severe Sepsis	Sepsis + one or more organ dysfunction <sup>2</sup> , hypotension before fluid challenge, or Lactate > 4 mmol/L	
Septic Shock	Severe Sepsis + Hypotension <sup>3</sup> despite fluid challenge	

Table adopted from 2001 SCCM/ESICM/ACCP/ATS/SIS International Sepsis Definitions Conference.

<sup>1</sup>Hyperglycemia without history of diabetes, Hypoglycemia, without diabetes, in an immunocompromised patient increases suspicion of infection.

<sup>2</sup>Organ dysfunction can be defined as: respiratory failure, acute renal failure, acute liver failure, coagulopathy, or thrombocytopenia. Laboratories that will suggest organ dysfunction include: PaO2(mmHg)/FiO2 <300, Creatinine >2.0 mg/dl OR Creatinine Increase >0.5 mg/dL, INR >1.5, PTT >60 sec, Platelets < 100,000/uL. Total bilirubin >4 mg/dL

<sup>3</sup>Systolic Blood Pressure < 90 mmHg or Mean Arterial Pressure < 65 mmHg

### BASIC

1. Attempt to identify cause (i.e. allergic reaction)
2. O<sub>2</sub> as appropriate
3. Request ALS intercept
4. Transport

### INTERMEDIATE

## 5. Consider causes

- a. Massive GI bleed, vaginal bleeding, vomiting, diarrhea, ruptured aneurysm - Treat per "Green 13: Hypovolemic Shock"
- b. Cardiogenic shock - Treat per "Red 17: Cardiogenic Shock"
- c. Anaphylaxis - Treat per "Gold 1: Allergy and Anaphylaxis"
- d. Severe Sepsis
  - i. Assess for pulmonary edema (crackles in the lungs)
  - ii. If available and trained perform point of care lactate:
    - A. If POC lactate > 4 and no evidence of pulmonary edema, administer 1000 ml NS bolus
  - iii. If POC lactate not available and no evidence of pulmonary edema
    - A. Contact OLMC for OPTION of 500 ml NS bolus
  - iv. Notify receiving hospital that the patient is a "Code Sepsis"

## CRITICAL CARE / PARAMEDIC

### 6. For anaphylactic or presumed septic shock

- a. If no response to initial treatment
  - i. Contact medical control to discuss additional fluid bolus versus initiating dopamine infusion
    - A. Dose 5-20 mcg / kg / min (2-9 mcg / pound / min)
    - B. Titrate to maintain SBP greater than 90 mm Hg

7. Additionally, if the patient is found to have Adrenal Insufficiency (via medic alert bracelet, patient records, or family/staff reports), administer methylprednisolone (Solu-Medrol) as follows:

- a. Adults – methylprednisolone (Solu-Medrol) 125 mg IV, IM, or IO x 1 dose
- b. Pediatrics - methylprednisolone (Solu-Medrol) 2mg/kg IV, IM, or IO x 1 dose

Weight Based Dopamine Dosing Chart

Weight (lbs)	90	110	130	150	175	200	225	250	300
Weight (kg)	40	50	60	70	80	90	100	115	135
Gtts / min (60 gtt set)	8-30	9-38	11-45	13-53	15-60	17-68	19-75	22-86	25-101



## **ABDOMINAL PAIN**

Many diseases cause abdominal pain. While it is almost impossible to diagnosis the cause of abdominal pain in the EMS environment, it is important to be prepared for the patient to suddenly get very ill. If the patient is in shock, refer to the medical shock protocol.

### **BASIC**

1. O2 as appropriate
2. If evidence of shock, refer to “Medical Shock” protocol

### **INTERMEDIATE**

3. Establish IV at KVO rate
4. Perform 12-lead EKG (If so trained)

### **CRITICAL CARE / PARAMEDIC**

5. Perform 12-lead EKG
  - a. If 12-lead EKG indicates STEMI, refer to “Red 1: Chest Pain”
6. Perform pain-rating score
7. For non-traumatic abdominal pain in a stable patient with a normal level of consciousness:
  - a. For nausea or vomiting, administer Ondansetron (Zofran) 4 mg IV and may repeat once after 15 minutes as needed. For dosage question (such as in pediatrics), abnormal vital signs, coincident drug use (including alcohol) by patient, if IV cannot be established or if not isolated extremity trauma, contact OLMC before administering medication.
8. Contact OLMC for the following option - If appropriate, administer fentanyl 1 mcg / kg IV

## NAUSEA / VOMITING

Nausea and vomiting are symptoms of some other illness. Therefore, this is a supplemental protocol to be used in addition to other relevant protocols

### BASIC

1. Transport in position of comfort

### INTERMEDIATE

2. Perform 12-lead EKG (if so trained)
3. Establish IV TKO
4. Consider 250 ml NS bolus if active vomiting

### CRITICAL CARE / PARAMEDIC

5. Complete 1-4 as above
6. Administer Ondansetron (Zofran) 4 mg IV and may repeat once after 15 minutes as needed.
  - a. Contact Online Medical Control for dosage question (such as in pediatrics), abnormal vital signs, coincident drug use (including alcohol) by patient, if IV cannot be established or if not isolated extremity trauma, contact OLMC before administering medication.

## Green (Truama) Summary of Changes

Location of Change (in this document)	Change	Purpose of Change	Expected Impact
Page 92	Added – based on patient complaint and mechanism of injury in the “Suspect Spinal Injury” section	Response from the MDPB to remind providers to include consideration of mechanism in the process of evaluating for spinal injury	Educational
Page 97	<p>Changed – “TENSION PNEUMOTHORAX” to “CHEST TRAUMA PROTOCOL”</p> <p>Changed – Under Paramedic “Chest Decompression” to “For presumed tension pneumothorax – perform chest decompression”</p> <p>Changed – “2 inch – 14 G IV catheter” to “Maine EMS Approved Device”</p> <p>Changed – “Mid Axillary Line” to “Anterior Axillary Line”</p>	<p>Focus attention on the broader complaint of trauma to the chest rather than tension pneumothorax</p> <p>As this is a broader in scope, must clarify that medics are to perform the procedure when they presume the patient has a tension PTX</p> <p>This change allows services to use all MEMS approved devices for chest decompression including the Turkel needle.</p> <p>This represented a mistake in the prior protocols and is corrected here.</p>	Educational
Page 99	Deleted red portion – “If bleeding is uncontrolled with pressure and <b>coming from torso or scalp</b> ” consider applying contained hemostatic agent approved by Maine EMS, <b>AND (see Below)</b>	<p>Word smithing and streamlining</p> <p>- All bleeding, regardless of site, that has not been controlled by this point in the protocol may be benefited by use of a hemostatic agent, not just those located to torso or scalp.</p>	

	Deleted following “If it is coming from an extremity and there is continued bleeding despite tourniquet, apply hemostatic agent approved by Maine EMS.”		
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Page 100	Changed “unless patient showing signs and symptoms of cerebral edema/herniation. Once patient begins showing signs and symptoms of cerebral edema/herniation, ventilate the patient at 20 BPM. See description below” to “It is important to neither hypoventilate or hyperventilate these patients”	Recognizing that hyper and hypoventilation are both deleterious to the head injured patient, changed this wording to impress upon providers the importance of maintaining proper ventilatory rate.	Education.
Page 101	Changed – “Consider proximal tourniquet if direct pressure does not work.” To “Use Maine EMS approved method for hemorrhage control – to include direct pressure, tourniquets, hemostatic agents, etc”	Clarity as well as reflecting on the various methods of hemorrhage control, rather than tourniquet only	Educational
Page 103	<b>Changed</b> “Uncontrolled Bleeding (permissive hypotension)—for suspected internal bleeding or uncontrolled bleeding; fluid resuscitate to maintain BP between 80-90 mm Hg.” To “Uncontrolled Bleeding (permissive hypotension)—for suspected internal bleeding or uncontrolled bleeding; fluid resuscitate to maintain <b>target systolic BP above 90 mm Hg.</b> ”	Permissive hypotension was a new concept as of the most recent protocol update. The MDPB wants to clarify the use of permissive hypotension. Providers should not wait until a patient’s BP is in the 80-90 range to begin resuscitation but rather aim for maintaining a systolic BP > 90 throughout their care of the patient. Using this verbiage, we are able to delete the phrase “Suspected TBI/CNS injury – fluid resuscitate to maintain BP greater than 90 mm Hg.”	Educational
Page 104	<b>Changed</b> “If the cause of hypovolemic shock is felt to be secondary to acute unstable pelvic fracture,	Remove need for OLMC to utilize pelvic stabilization devices and to account for all of the MEMS	Educational

	contact OLMC for consideration of using MAST or PASG as a pelvic stabilization device.” To “If the cause of hypovolemic shock is felt to be secondary to acute unstable pelvic fracture, consider using a Maine EMS approved pelvic stabilization device.”	approved pelvic stabilization devices, including the T-POD and other commercial devices.	
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Page 105	<p>BURN PROTOCOL</p> <p><b>Changed</b> “IV en route” to “Venous access en route”</p> <p>Added – “If Shock not present, resuscitate based on the Parkland Formula”</p>	<p>Wanted to account for the various methods of venous access, including IO’s</p> <p>This is in response to reports the MDPB have heard that burn patients may be OVER or UNDER resuscitated upon being transitioned to critical care teams or hospitals.</p>	<p>Educational - As the Parkland Formula is taught in primary EMS course, this should be familiar to most providers and a review.</p>
Page 106	Added – Parkland Formula	Quick Reference	Educational
Page 107	Added (red portion)- Isolated Extremity Trauma (includes shoulders and hips)	Clarity	Educational
Page 107	Changed upper limit of Fentanyl from 400 micrograms to 5 micrograms/kg	The MDPB felt that weight based dosing of Fentanyl, both for the initial dose as well as the total cumulative dosing would be both safer and more effective.	Educational
Page 109	<b>Nausea/Vomitting Protocol – removed</b>	The N/V protocol in the Green section was originally intended to offer anti-emetics to patients receiving Opioids for pain management. As the Yellow section has added a general Nausea/Vomiting protocol to cover all causes of N/V, the MDPB felt as if this protocol, specific to N/V secondary to Opioids, was unnecessary	Educational

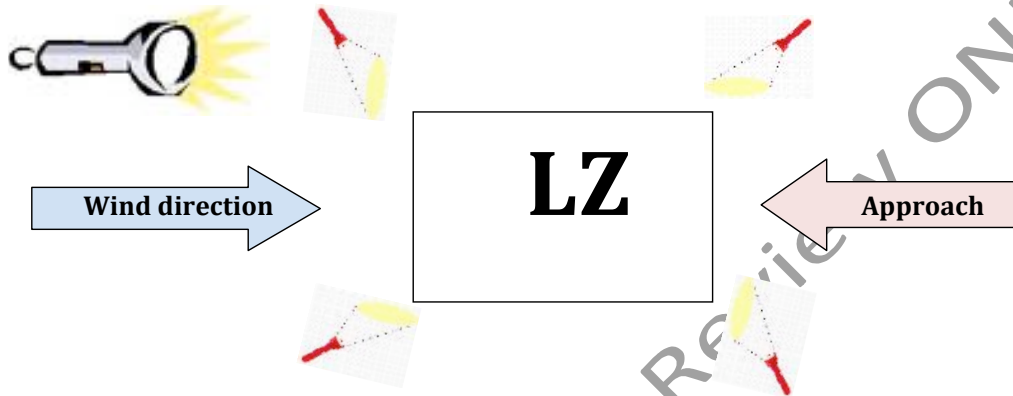
## MINIMUM LANDING ZONE (LZ) AREA

100' x 100'

user 11/1/10 11:23 AM

**Comment:** Kevin Kendal, Heather Cady, and Norm Dinnerman – please review this and comment. Should we amend?

Must mark wind direction at night



### Aircraft Arrival

- Identify Scene and LZ Incident Command
- Establish radio communications prior to landing
- State Fire or State EMS are the default frequencies
- Advise pilot of terrain conditions, vertical obstructions, and wind direction
- Secure LZ and identify personnel to guard tail rotor guards
- Notify pilot if patient is packaged and ready for hot load

### Operating Around Helicopter

- Approach aircraft with crew escort only
- Approach aircraft 90 degrees to door only
- Avoid tail boom and rotor at all times
- Eye and ear protection should be worn
- Do not carry anything above shoulder height
- Secure all loose medical and personnel equipment
- Spotlights, headlights, and/or handheld lights should not be pointed directly at the helicopter

### Terrain:

- Flat, firm, free of debris

### Vertical Obstructions:

- Mark towers, antennas, poles, tall trees



- Consider dust and snow
- LZ should be down wind of accident scene
- Free of vehicles and people
- Any markers must be able to withstand 60 mph winds
- Approach path only from down slope of aircraft

with vehicle

- Check the wind, helicopter must land and take off into the wind
- Ideal = clear approach and departure angle 8:1 (200' to 25' vertical obstruction)

#### **Wires:**

- Electrical and utility wires are greatest single hazard to helicopters
- Search LZ area for wires
- Mark all wires, high-tension lines, guide wires with vehicles
- Notify pilot of all wires in proximity to landing zone

#### **Lighting:**

- Never shine light directly at aircraft
- All emergency lights on until aircraft overhead
- Shut down vehicle strobes and white lights when aircraft on approach
- Keep working lights on minimum

#### **Aircraft Departure**

- Keep LZ clear for at least 5 minutes after helicopter departure
- In case of emergency the helicopter may have to return to LZ
- Keep communications open with pilot

**REMEMBER – EVERYONE IS RESPONSIBLE FOR SAFETY**

**TRAUMA TRIAGE PROTOCOL**  
**PATIENT WITH BLUNT OR PENETRATING TRAUMA**

**ASSESSMENT #1**  
 (ASSESS PHYSIOLOGIC COMPROMISE)

**Determine**  
 Glasgow Coma Scale "Green 7"  
 Respiratory Rate  
 Systolic Blood Pressure



**CALCULATE REVISED TRAUMA SCORE (RTS) "Green 8"**  
**Pediatric Trauma Score (PTS) "Green 9"**

**OR**

**IS RTS less than 11 OR PTS less than 8?**

**NO**

**YES**

**ASSESSMENT #2**  
**ASSESS ANATOMIC INJURY**

**DO ANY OF THE FOLLOWING CONDITIONS EXIST?**

- b. Paralysis
- c. Penetrating injury to chest, abdomen, head, or neck
- d. Two or more proximal long bone fractures
- e. Unstable pelvic fracture
- f. Open or depressed skull fracture
- g. Major burn of 25% or greater associated with trauma
- h. Flail chest
- i. Use of Tourniquet

Go to nearest Regional Trauma Center (CMMC, EMMC, MMC) if total transport time is less than 45 minutes, otherwise go to closest ED which is a trauma system participating hospital; any questions, then contact OLMC

**NO**

**YES**

**ASSESSMENT #2A**

**ASSESSMENT #2A**

- a. Amputation proximal to wrist or ankle

**NO**

**YES**

**ASSESSMENT #3**

**ASSESS FOR PRESENCE OF HIGH ENERGY TRANSFER SIGNATURE**

- a. Associated fatality in the same vehicle
- b. Ejection from the automobile
- c. Falls greater than 20 feet
- d. Rollover
- e. Auto-pedestrian or auto-bike with greater than 5mph impact
- f. Pedestrian thrown or run over by vehicle
- g. Motorcycle crash greater than 20mph or with separation of rider from cycle
- h. High speed auto crash
  - 1. Initial speed greater than 40mph
  - 2. Major auto deformity greater than 20 inches
  - 3. Intrusion into passenger compartment greater than 12 inches

**NO**

**YES**

**ASSESSMENT #4**

**HIGH RISK INDICATORS**

- a. Age less than 5 or greater than 55 years
- b. Cardiac or respiratory disease
- c. Insulin dependent diabetes, cirrhosis or morbid obesity
- d. Pregnancy
- e. Immunosuppressed patients
- f. Patient with bleeding disorder or an anticoagulant

**NO**

**YES**

**TRANSPORT TO TRAUMA SYSTEM  
PARTICIPATING HOSPITAL**

**CONTACT OLMC**

1. OLMC considers patient transport to Regional Trauma Center (RTC) using the following guidelines:
  - a. If patient would best be served by RTC and transport time less than 45 minutes, then OLMC may direct you to the RTC
  - b. If patient requires RTC but transport time greater than 45 minutes or patient requires life saving interventions, patient to go to the closest ED
2. If upon arrival in ED;
  - a. Facility is not a RTC and;
  - b. Patient continues to satisfy criteria of assessments One and Two, and;
  - c. Patient can be stabilized for further transport, then receiving ED clinician should provide only life-saving procedures (avoiding unnecessary diagnostics) prior to transport to RTC unless he/she judges clinical situation to not warrant such transfer

If prehospital providers are unable to definitively manage the airway, maintain breathing or support circulation, begin transport to most accessible hospital and simultaneously request ALS intercept or tiered response.

## SPINE ASSESSMENT PROTOCOL

### Suspected Spinal Injury – Based on patient complaint and mechanism of injury

**Immobilize**

**Don't**

**Unreliable?\***

(Intox / Alt LOC /  
Acute Stress Reaction)

YES

**Immobilize**

NO

**Distracting Injury?\*\*\***

YES

YES

**Abnormal  
Sensory / Motor Exam?**

**Spine Pain / Tenderness?**

NO

NO

- MVC applies to crashes of all motorized vehicles: e.g. automobile, motorcycle, snowmobile, etc.

\*\* Clearance of the spine requires the patient to be calm, cooperative, sober, and alert.

\*\*\* Distracting injury includes any injury that produces clinically apparent pain that might distract the patient from the pain of a spine injury.

This protocol may be used by MEMS licensees, at the EMT Basic level or above, who have successfully completed the MEMS Spine Injury Management Course

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## GLASGOW COMA SCALE (GCS)

The Glasgow Coma Scale or Score provides a practical means for monitoring changes in the level of consciousness. It is based upon eye opening, verbal, and motor responses. If each response is given a number (high for normal, low for impaired), the total responsiveness of the patient can be expressed by the sum of the numbers. Because the scale is physiologic, it is dynamic and subject to change as the patient's condition changes. Therefore, it must be repeated frequently. The lowest score is 3 and the highest is 15. When using the scale, it is best to DESCRIBE each response rather than just using numbers. A painful stimulus is rubbing the sternum with the knuckles or pinching an extremity.

Adult	Pediatric	Score
<b>Eye Opening Response:</b>	Same as Adult	
Open spontaneously on own		4
Open to voice command		3
Open to painful stimuli		2
Eyes remain closed		1
<b>Best Motor Response:</b>	Same as Adult	
Moves on command		6
Pushes painful stimuli away		5
Withdraws from painful stimuli		4
Decorticate (flexion)		3
Decerebrate (extension)		2
No motor response to pain		1
<b>Best Verbal Response:</b>		
Oriented	Appropriate words or social smile, fixes and follows	5
Confused	Cries but consolable	4
Inappropriate words	Persistently irritable	3
Incomprehensible sounds	Restless, agitated	2
No sounds	None	1
<b>Total</b>		3-15

## REVISED TRAUMA SCALE

<b>RESPIRATORY RATE</b>  10 – 29 = 4 greater than 30 = 3 6 – 9 = 2 1 – 5 = 1 NONE = 0	<b>Respiratory Points</b>
<b>SYSTOLIC BP</b>  greater than 90 = 4 76 – 89 = 3 50 – 75 = 2 1 – 49 = 1 NO PULSE = 0	<b>Systolic BP Points</b>
<b>CONVERT GLASGOW COMA SCORE TO TRAUMA POINTS</b>  GCS: 13 – 15 = 4 9 – 12 = 3 6 – 8 = 2 4 – 5 = 1 3 = 0	<b>Trauma Points =</b>
<b>REVISED TRAUMA SCORE =</b>	



## PEDIATRIC TRAUMA SCORE

<b>SCORE →</b>	<b>+2</b>	<b>+1</b>	<b>-1</b>
<b>COMPONENT ↓</b>			
Weight	greater than 44 LBS (greater than 20 KG)	22 – 44 LBS (10 – 20 KG)	less than 22 LBS (less than 10 KG)
Airway	Normal	Maintainable Invasive	Unmaintainable
Blood Pressure	greater than 90 mm Hg	50 – 90 mm Hg	less than 50 mm Hg
Level of Consciousness	Completely Aware	Obtunded or any LOC	Comatose
Open Wound	None	Minor	Major Or Penetrating
Fractures	None	Closed Fracture	Open Or Multiple fractures

## CHEST TRAUMA PROTOCOL

### BASIC

1. O<sub>2</sub> as appropriate
2. Assist ventilations (PPV) if needed
3. Request ALS if available

### INTERMEDIATE / CRITICAL CARE

4. IV en route
5. If shock present, perform fluid challenge
6. Cardiac monitor
7. Request Paramedic if available

### PARAMEDIC

8. For presumed tension pneumothorax, perform chest decompression

**NOTE:** Chest decompression will be performed on the involved side using a Maine EMS approved device at the second or third intercostal space on the mid-clavicular line, or fifth or sixth space on the anterior-axillary line.

## HEMORRHAGE

### BASIC

1. Ascertain all sites of bleeding and control with pressure
2. Treat for shock if indicated and oxygen as appropriate
3. If bleeding is on extremity and uncontrolled with pressure, consider applying a tourniquet proximal to the bleeding site
4. If amputation, rinse severed part briefly and gently with sterile saline to remove debris
  - a. Wrap severed part in sterile saline gauze, moisten with sterile saline (do not soak), place in a water-tight container. Place container on ice (do not use dry ice). Do not put part directly on ice. If necessary, use ice packs to provide some level of cooling.
5. If bleeding is not located on an extremity or on an area not amenable to tourniquets and is uncontrolled with pressure, consider applying contained hemostatic agent approved by Maine EMS.
6. Apply pressure dressing over hemostatic agent approved by Maine EMS
7. Request ALS if available

### INTERMEDIATE /CRITICAL CARE / PARAMEDIC

8. IV en route (see hypovolemic shock).
9. Cardiac monitor

## HEAD TRAUMA

### BASIC

1. Immobilize entire spine on long spinal immobilization device
2. O<sub>2</sub> as appropriate. If necessary, airway management as per “Blue 3, 4 or 5”
3. If necessary to support ventilation, provide PPV at 10 – 12 breaths per minute (BPM)  
\*\* It is important to neither hypoventilate or hyperventilate these patients\*\*
4. If not in shock, elevate head of long spinal immobilization device while maintaining full spinal immobilization
5. Treat for shock if indicated
6. Request ALS if available and patient has altered mental status or abnormal vital signs

### INTERMEDIATE / CRITICAL CARE / PARAMEDIC

7. IV en route
8. If shock present, perform fluid challenge to maintain BP greater than 90 mm Hg
9. Cardiac monitor
10. Manage airway as needed “See Blue 4 and 5”

## HYPOVOLEMIC SHOCK

If history of illness or mechanism of injury consistent with signs/symptoms of shock (elevated pulse, elevated respiratory rate, cool/pale skin, altered LOC, anxiety, sweating or lowered BP) then transport as soon and as efficiently as possible.

If the cause of the shock is:

Anaphylaxis, "See Gold 1"

Cardiogenic, "See Red 17"

Tension Pneumothorax "See Green 10"

Medical Shock, "See Gold XX"

### BASIC

1. Control bleeding. Use Maine EMS approved method of hemorrhage control – to include direct pressure, tourniquet, hemostatic agents, etc.
2. O<sub>2</sub> as appropriate
3. If patient in third trimester of pregnancy:
  - a. Place patient on left lateral recumbent side and re-evaluate
  - b. In shock secondary to trauma, immobilize patient on a spinal board before placing in left lateral recumbent position (manually displace uterus to left if elevation not possible)
4. Request ALS if available

### INTERMEDIATE / CRITICAL CARE / PARAMEDIC

5. IV en route
6. Cardiac monitor
7. If shock present, i.e. BP less than 90 mm Hg in an adult less than 65 years of age, perform fluid challenge according to the following guidelines:
  - a. Controlled bleeding—in situations where the provider has controlled the hemorrhage, give 1-2 liters of NS or LR to restore normal vital signs
  - b. Uncontrolled Bleeding (permissive hypotension)—for suspected internal bleeding or uncontrolled bleeding; fluid resuscitate to maintain target systolic BP above 90 mm Hg.
  - c. Suspected TBI/CNS injury—fluid resuscitate to maintain BP greater than 90 mm Hg.

- 
8. Contact OLMC if patient is greater than 65 years of age for a fluid challenge order

**If the cause of hypovolemic shock is felt to be secondary to acute unstable pelvic fracture consider using a Maine EMS approved pelvic stabilization device. If Maine EMS approved pelvic binder is not available, consider immobilization with a sheet.**

---

## BURNS

### BASIC

1. Remove burned clothing and jewelry unless adhered to patient
2. O<sub>2</sub> as appropriate
3. Give highest priority to airway problems and major trauma
4. Manage shock if indicated
5. If burn area is **less than 10%** Body surface area (BSA), cover with dressing soaked in normal saline or other commercially prepared moist burn dressing
6. If burn area is **greater than 10%** BSA, cover with dry dressing, sterile sheet, or commercially prepared dry dressing
7. Request ALS if available; where there is a possibility of respiratory compromise, shock, burns greater than 10% BSA or need for pain medications

### INTERMEDIATE

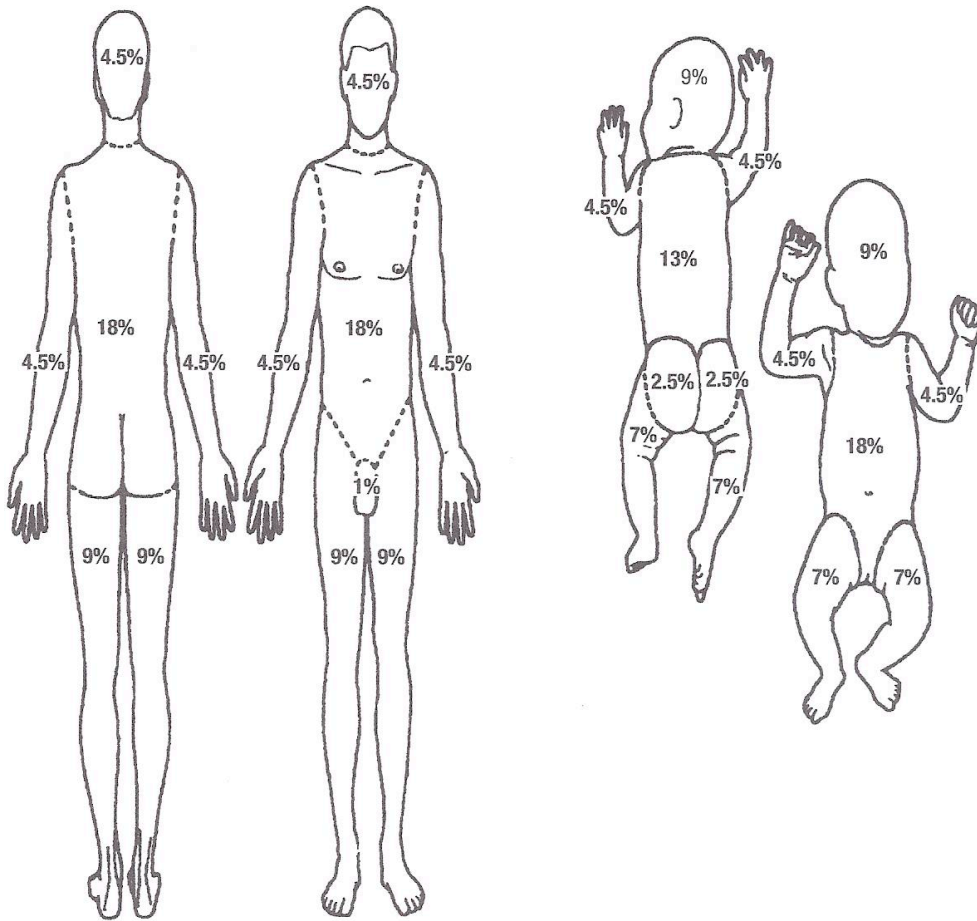
8. Venous access en route (avoid placing IV/IO in burned skin if possible)
9. Cardiac monitor (avoid placing leads on burned skin)
10. If shock present, perform fluid challenge
11. If Shock NOT present, resuscitate based on the Parkland Formula (see below)

### CRITICAL CARE / PARAMEDIC

12. "See Green 17" (Pain Management) for pain treatment algorithm

## RULE OF NINES

### ESTIMATION OF BURNED BODY SURFACE (PERCENT)



Remember: The patient's palm (hand minus fingers) is about 1% of the patient's body surface area.

The Parkland Formula is as follows.

Fluid for first 24 hours (ml) =  $4 \times \text{Patient's weight in kg} \times \% \text{BSA}$ .

The first half of this amount is delivered in the first 8 hours from the time of the burn, and the remaining half is delivered in the remaining 16 hours.



## PAIN MANAGEMENT

### BASIC

1. Reassurance
2. Splinting as needed, while inline stabilization. Consider ice application in isolated extremity trauma if hypothermia/frostbite not an issue.
3. Request ALS if available for pain management

### INTERMEDIATE

4. Consider IV access in preparation for ALS pain management

### CRITICAL CARE / PARAMEDIC

5. **Isolated extremity trauma** (includes shoulders and hips) may use the following, otherwise go to number "6"
  - a. For isolated extremity trauma in a stable patient, consider the use of Fentanyl 1 microgram/ kg IV or IM initially with an initial maximum dose of 100 micrograms then 25-75 micrograms IV every 5- 10 minutes titrated to effect with cumulative maximum dose of 5 micrograms/kg.
  - b. Alternative Pain Control: 50% nitrous oxide/oxygen mixture self administered (such as Nitronox).
  - c. Contact OLMC if further dosing needed or vital signs are not stable. For dosage question (such as in pediatrics), abnormal vital signs, coincident drug use (including alcohol) by patient, if cannot be established or if not isolated extremity trauma, contact OLMC before administering medication.
  - d. For nausea or vomiting, administer Ondansetron (Zofran) 4 mg IV and may repeat once after 15 minutes if needed. For dosage question (such as in pediatrics), abnormal vital signs, coincident drug use (including alcohol) by patient, if IV cannot be established or if not isolated extremity trauma, contact OLMC before administering medication.
6. **Contact OLMC** before using any narcotic, antiemetic, or anxiolytic for multiple trauma or isolated trauma involving head, spine, or torso (including thorax, abdomen, and pelvis). Use narcotics, antiemetics, and anxiolytics with caution in pediatrics, in those with hypotension or Bradypnea, or if coincident drug use

(including alcohol) by patient. If IV cannot be established, OLMC can help with IM drug doses.

- a. Consider the use of Fentanyl 1 microgram/ kg IV or IM initially with an initial maximum dose of 100 micrograms then 25-75 micrograms IV every 5- 10 minutes titrated to effect with cumulative maximum dose of 5 mcg/kg.
  - b. For nausea or vomiting, administer Ondansetron (Zofran) 4 mg IV and may repeat once after 15 minutes if needed.
  - c. Consider self-administered fixed dose of 50% nitrous oxide/oxygen mixture delivered by commercially available device (such as Nitronox). (contraindicated in suspected pneumothorax).
-

## Yellow (Environmental and Tox) Summary of Changes

Location of Change (in this document)	Change	Purpose of Change	Expected Impact
Page 115	<b>Removed</b> Hyperventilation as a therapy for TCA ingestion	Little literature and not standard of care	Educational
Page 124	Added comment on using WHO ORT salt OR a "homemade" version with 1 L water, 1 tsp table salt and 8 tsp sugar.	Clarify appropriate fluids for PO rehydration	Education
Page 126	Amended – dosing of Tetracaine for Ophthalmologic pain	Better clarify the dosing of Tetracaine and to remind providers that this is to be provided by only and not given to the patient for self administration	Education

## TOXINS

**Call Poison Control (1-800-222-1222) to receive guidance on patient care and so that information on the toxin can be faxed to ED prior to patient's arrival.**

**This protocol refers to toxins that are:**

- Ingested
- Inhaled
- Absorbed
- Injected (envenomation)

**This protocol refers to toxins that cause:**

- Systemic effects
- Local effects
- Both systemic and local effects

### I. GENERAL ASSESSMENT

**What** Identify specific toxin and amount of exposure if possible  
Bring pill bottles, vomitus samples, MSDS sheets, placard info, shipping manifests, etc.

**When** Identify time of exposure if possible

**Why** Identify reason for exposure if possible

### II. GENERAL TREATMENT

#### BASIC

1. Scene safety: protect rescuers and patients from immediate danger and contamination. Toxic exposures might require special precautions, including HAZMAT precautions, before patient treatment begins.
2. O<sub>2</sub> as appropriate
3. Clear airway as necessary with suction and position
4. Ventilate as necessary
5. Consider local measures for treatment
6. Request ALS if available

#### INTERMEDIATE / CRITICAL CARE / PARAMEDIC

7. Manage airway as necessary "See Blue 3, 4 & 5"
8. If patient hypotensive – IV en route – perform fluid challenge

### III. SPECIFIC TREATMENTS TO REMOVE AND DILUTE TOXINS

#### Initiate measures to remove and dilute toxin

##### For Ingested Toxins:

#### BASIC

1. O<sub>2</sub> as appropriate
2. Clear airway as necessary with suction and position
3. Ventilate as necessary
4. Consider local measures for treatment

#### INTERMEDIATE / CRITICAL CARE / PARAMEDIC

5. Manage airway as necessary "See Blue 3, 4 & 5"
6. If patient hypotensive – IV en route – perform fluid challenge

---

#### Contact OLMC for OPTION:

1. Activated charcoal without sorbitol 1 gm/kg PO
  2. Contraindications to charcoal include:
    - a. Ingestion of caustic substance
    - b. Hydrocarbons
    - c. Seizures
    - d. Patient is unable to swallow/protect airway
-

**For Inhaled Toxins:**

**BASIC / INTERMEDIATE / CRITICAL CARE / PARAMEDIC**

1. Remove the patient from exposure site
2. Deliver 100% oxygen if possible

**For Absorbed Toxins:**

**BASIC / INTERMEDIATE**

1. Flush skin vigorously and continuously with water
2. Flush eyes continuously with water, saline, or LR

**CRITICAL CARE / PARAMEDIC**

3. Consider pain medication "See Green 17," or analgesic for eye pain "See Yellow 15"

**For Injected Toxins:**

There is no effective method of removing/diluting toxins that have already been injected through the skin. Avoid further exposure to injected toxins.

## IV. ANTIDOTES FOR SPECIFIC TOXINS

### For Cyclic Antidepressants

Some examples of cyclic antidepressants include: Amitriptyline, Desipramine, Doxepin, Imipramine, Nortriptyline, **notify OLMC**.

#### BASIC

1. Manage airway as needed "See Blue 3, 4 & 5"
2. Request ALS if available

#### INTERMEDIATE

3. Perform fluid challenge if hypotensive

#### CRITICAL CARE / PARAMEDIC

In patients with known cyclic overdose, with low BP, or seizures or ventricular dysrhythmias or wide QRS complex:

4. Administer Sodium Bicarbonate 1 mEq/kg IV, and contact OLMC if further direction needed for conditions such as arrhythmias.
  5. IV Fluid bolus if hypotensive
-

## For Opiates:

### BASIC

1. Administer O2 as appropriate
2. Secure open airway by positioning or airway maneuvers (i.e.: chin lift or jaw thrust) as appropriate. "See Blue 3, 4 & 5"
3. Request ALS if available

### INTERMEDIATE

4. IV en route
5. Manage airway as needed "See Blue 3, 4 & 5"
6. If respirations less than 12 per minute AND narcotic overdose suspected, Contact OLMC for the option of:
  - a. Naloxone (Narcan) 0.1 – 2.0 mg IV, IO, IM or Intranasal (may opt to give 2.0 mg as starting dose if using intranasal route). Titrate to improved respiratory drive.
  - b. NOTE: Patients abruptly and fully awakened from narcotic overdose may become combative or suffer acute narcotic withdrawal symptoms. Some drugs such as Propoxyphene, Talwin, or Methadone may require higher doses.
  - c. Once intubated, do not give naloxone.
7. Cardiac monitor

### CRITICAL CARE / PARAMEDIC

8. If respirations less than 12 per minute AND narcotic overdose suspected:
  - a. Naloxone (Narcan) 0.1 – 2.0 mg IV, IO, IM or Intranasal (may opt to give 2.0 mg as starting dose if using intranasal route). Titrate to improved respiratory drive.
  - b. NOTE: Patients abruptly and fully awakened from narcotic overdose may become combative or suffer acute narcotic withdrawal symptoms. Some drugs such as Propoxyphene, Talwin, or Methadone may require higher doses.
  - c. Once intubated, do not give naloxone.



**For Organophosphate/Carbamate:**

**(WARNING: SKIN CONTACT WITH THIS TOXIN CAN BE FATAL TO RESCUER)**

If you suspect a Bio-Terrorism/WMD threat. "See Gray 27". In unstable patients with known organophosphate/carbamate poisoning:

**BASIC**

1. O<sub>2</sub> as appropriate
2. Vigorous suctioning may be necessary
3. Request ALS if available

**INTERMEDIATE**

4. IV en route
5. Manage airway as appropriate. Ventilatory support can be critical in these poisonings  
"See Blue 3, 4 & 5"
6. Cardiac monitor

**CRITICAL CARE / PARAMEDIC**

7. Administer Atropine 2 mg IV
8. If seizures are present, refer to Yellow (XXX) or Pink (XXX) – Adult or Pediatric Seizure Protocol.

- 
9. Contact OLMC for OPTIONS:
    - a. Repeat dose, as necessary, every 5 minutes
    - b. Administer other selected antidotes
-

## MILD HYPOTHERMIA

### Predicating treatment based on rectal temperature

**ASSESSMENT: Reduced core temperature between 95°F and 89.6°F (between 35°C and 32°C) with a shell to core shunt**

- Cool, pale, cyanotic skin
- Cold diuresis
- Reduced shell function causing clumsiness with fine motor tasks
- Cardiac function is stable
- Shivering
- Abnormal mental status

### TREATMENT:

#### BASIC

Since mild hypothermia causes no significant cardiac instability, any method of field rewarming is generally safe:

1. Field rewarming:
  - a. Reduce the cold challenge by protecting the patient from the cold environment by insulating from the ground, protecting from the wind, and eliminating heat loss by evaporation by removing wet clothing once sheltered.
  - b. Reverse the cold challenge by adding external heat and moving the patient to a warm environment. External heat may be added by placing hot packs at axilla, groin, head, and neck – be sure to protect cold skin from direct contact with hot packs.
  - c. Administer oxygen [humidified and heated to a maximum of 108°F (42°C) if available, - heating oxygen without humidifying will not aid in rewarming].
  - d. Increase heat retention by adding insulation. Remember to insulate the head and neck and cover the patient with a vapor barrier, such as a large plastic tarp or large plastic bag – do not cover the face. You may cover the patient's face with a light fabric to reduce heat loss.
  - e. Increase intrinsic heat production by light exercise if the patient is dry. Calorie stores must be adequate.
  - f. If the patient can safely swallow and protect his airway, increase calorie stores by giving liquid laced with sugar – sugar is more important than the temperature of the liquid. Do not allow alcohol or tobacco use.

2. Treat associated conditions
3. Treat cardiac problems and cardiac arrest as per normothermic protocols.

**INTERMEDIATE / CRITICAL CARE / PARAMEDIC**

4. Warmed IV fluid may be necessary, perform fluid challenge (250 – 500 ml in normal adult; 20 ml/kg in peds), with repeating once if necessary. Use normal saline heated to 104°-108°F (40°-42°C) if available.

- 
5. Contact OLMC if a 3<sup>rd</sup> bolus is necessary
-

## MODERATE OR SEVERE HYPOTHERMIA WITH SIGNS OF LIFE

(Pulse or Respirations)

### Assessment

**Moderate Hypothermia:** Reduced core temperature between 82.4° to 89.6°F (28° to 32°C) and patient's ability to rewarm without external heat source is limited.

- Cold, pale, beginning of cyanosis
- Cold diuresis
- Active external rewarming should be effective
- Shivering stops
- Medications may be given at temperatures greater than 86°F (30°C), but at increased intervals
- Resuscitation efforts (such as CPR) follow normothermic guidelines if the core temperature is above 86°F (30°C)

**Severe Hypothermia:** Reduced core temperature below 82.4°F (28°C) and patient has no ability to rewarm without external heat source.

- Cold, frozen, pale, cyanotic skin, rigidity
- Vital signs reduced or absent
- Below 86°F (30°C) shivering stops
- Loss of consciousness
- Increased risk of mechanically stimulated ventricular fibrillation/cardiac arrest in severe hypothermia
- Withhold medication until temperature greater than 30°C
- May require prolonged CPR and internal rewarming

### Treatment

---

#### Contact OLMC immediately

The severely cold heart is sensitive to a variety of stimuli, and fatal arrhythmias can be caused by incorrect or carelessly applied treatment efforts. However, these patients can be saved by immediate and aggressive internal rewarming techniques.

---

#### BASIC

1. Treat patients very gently – Do Not rub or manipulate extremities, or attempt to remove wet clothing without cutting them off
2. Treat as per "Mild Hypothermia," but with the following changes:
  - a. Do Not allow the patient to sit or stand until rewarmed

- b. Do Not give the patient oral fluids or food
- c. Do Not attempt to increase heat production with any exercise

**INTERMEDIATE / CRITICAL CARE / PARAMEDIC**

- 3. Warmed IV fluid may be necessary, perform fluid challenge (250-500 ml in normal adult; 20 ml/kg in peds), repeating once if necessary. Use normal saline heated to 104°-108°F (40°-42°C) if possible.

- 
- 4. Contact OLMC if a 3<sup>rd</sup> fluid challenge is necessary
-

## SEVERE HYPOTHERMIA WITH NO SIGNS OF LIFE

**Assessment:** As above for “Severe Hypothermia,” but no pulse or respirations are found. Check for pulse and respirations for 30 to 45 seconds.

Resuscitation should not be initiated if the following conditions are found:

1. Submerged in cold water for more than 1 hour
2. Core temperature of less than 50°F (10°C)
3. Obvious fatal injuries, such as decapitation
4. Frozen body (not just peripheral frostbite), such as ice formation in the airway
5. Chest wall so stiff that compressions for CPR not possible
6. Rescuers exhausted or in a dangerous situation

### Treatment

#### Contact OLMC immediately

The severely cold heart is sensitive to a variety of stimuli, and fatal arrhythmias can be caused by incorrect or carelessly applied treatment efforts. However, these patients can be saved by immediate and aggressive internal rewarming techniques.

#### BASIC

1. If the patient is not breathing, **give 3 minutes of rescue breathing after the initial 30 to 45 second pulse/respiration check.** After 3 minutes, check for pulse and respirations again for 30 to 45 seconds. If the patient is not breathing and has no pulse, then ventilate and if no return of signs of life after 30 minutes, then stop all efforts.
2. For rescue breathing, use mouth-to-mask breathing or bag-valve-mask breathing at a reduced rate to prevent hyperventilation – consider ventilating the adult patient at 6 breaths per minute (1/2 the normal rescue breathing rate).
3. If an Automated External Defibrillator (AED) is available, then proceed with one shock if the machine deems that this is indicated. If the core temperature cannot be determined or is above 86°F, then follow guidelines for resuscitation as if the patient were normothermic. If the patient’s core temperature is below 86°F (30°C), discontinue use of AED after the initial shock until the patient’s core temperature has reached 86°F (30°C).
4. Contact OLMC:

user 11/1/10 11:46 AM

**Comment:** Review newest AHA guidelines for consistency

- a. If CPR has been provided in conjunction with rewarming techniques for more than 30 minutes without the return of spontaneous pulse or respiration, contact OLMC for recommendations.
- b. If contact with OLMC is not possible, consider termination of resuscitation efforts after 60 minutes of CPR if no return of spontaneous pulse or respiration, and contact OLMC as soon as possible.

---

#### INTERMEDIATE

5. Warmed IV fluid may be necessary and given as fluid challenge (250-500ml in normal adult: 20 ml/kg in peds), with repeating once if necessary. Use normal saline heated to 104°-108°F (40°-42°C) if possible.
6. Contact OLMC if a 3<sup>rd</sup> bolus is necessary
7. If an advanced airway device needs to be placed (indications the same in normothermic and hypothermic patients), preoxygenate and adequately **ventilate for 3 minutes prior to placement of device**. Also, avoid hyperventilation as noted above – **give 6 breaths per minute in an adult** (1/2 the normal breathing rate).

#### CRITICAL CARE / PARAMEDIC

8. If ventricular fibrillation is present on the monitor, then one shock is OK. Shivering can mimic ventricular fibrillation. If the core temperature cannot be determined or is above 86°F (30° C), then follow guidelines for resuscitation as if the patient were normothermic. If the patient's core temperature is below 86°F (30°C), discontinue defibrillation after the initial shock until the patient's core temperature has reached 86°F (30°C).
9. Antiarrhythmic medication or cardiac medications in general should be held until the patient is warm (greater than 86°F/30°C) and undergoing rewarming.
10. Contact OLMC:
  - a. If resuscitation has been provided in conjunction with rewarming techniques for more than 30 minutes without the return of spontaneous pulse or respiration, contact OLMC for recommendations.
  - b. If contact with OLMC is not possible, consider termination of resuscitative efforts after 30 minutes and contact OLMC as soon as possible.

## **HYPERTHERMIA**

**HEAT EXHAUSTION** – Volume depletion due to sweat loss

### **ASSESSMENT:**

If core temperature is obtained, it will be variable, but always below 105°F (40.6°C).

Clinical pattern is essentially that of compensated hypovolemic shock:

- Weakness and vomiting
- Skin is variable. Core shell shunt to increase heat loss competes with shell core shunt to protect volume. Skin is usually pale and moist with variable skin temperature.
- Sweating
- Normal consciousness and CNS function

**TREATMENT:** Goal is to reduce sweating and to restore volume.

### **BASIC**

1. Protect the patient from heat challenge. Stop exercise and put patient at rest in a cool, shady place.
2. Oral fluids can be effective if the patient is not vomiting. Use dilute (less than 5% sugar) fluids given in small sips. Appropriate fluids to use include the World Health Organization's Oral Rehydration Solution OR a "homemade" solution using 1 teaspoon of salt and 8 teaspoons of sugar per 1 liter of water.

### **INTERMEDIATE / CRITICAL CARE / PARAMEDIC**

1. IV Perform fluid challenge



**HEAT STROKE** – A true medical emergency that requires radical field treatment. Usually, but not always, associated with heat exhaustion. Heat stroke is characterized by multisystem organ injury and failure.

**ASSESSMENT:**

If core temperature is obtained it is 105°F (40.6°C) or greater. Abnormal consciousness and/or CNS function; seizures are common. **Any acute change in consciousness/CNS function in the context of a significant heat challenge should be managed as heat stroke without delay.** Skin and sweating are variable, depending on volume status. Note that red, dry skin is not a dependable sign of heat stroke.

**TREATMENT:**

Immediate radical cooling is the urgent priority, followed by volume replacement.

**BASIC**

1. Cool the patient immediately by any means practical, such as:
  - a. Immerse the patient up to the neck in cold water
  - b. Moisten the skin and fan vigorously. This method is effective only at low ambient humidity.
  - c. Ice packs, wet patient, cool wet sheets, and air conditioning en route
2. Discontinue radical cooling if:
  - a. Shivering begins
  - b. Core temperature falls to 102°F (38.8°C).
  - c. Consciousness and CNS function return to normal

**INTERMEDIATE / CRITICAL CARE / PARAMEDIC**

3. IV Perform fluid challenge

## OPHTHALMOLOGY

### *Eye Pain from Chemical Exposure*

#### **BASIC / INTERMEDIATE**

1. Flush eye with sterile saline or clean water source continuously

#### **CRITICAL CARE / PARAMEDIC**

2. If no penetrating eye trauma and if the patient has no allergy to local anesthetics:  
Administer 2 drops Tetracaine ophthalmologic drops every 5 minutes as needed to affected eye to facilitate eye flushing. This may be repeated for a total of three doses. For further dosing, please contact medical control.
  - i. This is to be provided by the paramedic/CC provider only and not provided to the patient for ongoing use.
3. To facilitate flushing, the paramedic may use a Morgan lens if trained to do so.

### *Eye pain all other sources*

#### **CRITICAL CARE / PARAMEDIC**

If no penetrating eye trauma and if the patient has no allergy to local anesthetics (lidocaine, novocaine, bupivacaine, etc.): Administer 2 drops Tetracaine ophthalmologic drops every 5 minutes as needed to affected eye. This may be repeated for a total of three doses. For further dosing, please contact medical control.

## COMBATIVE PATIENT PROTOCOL

### BASIC

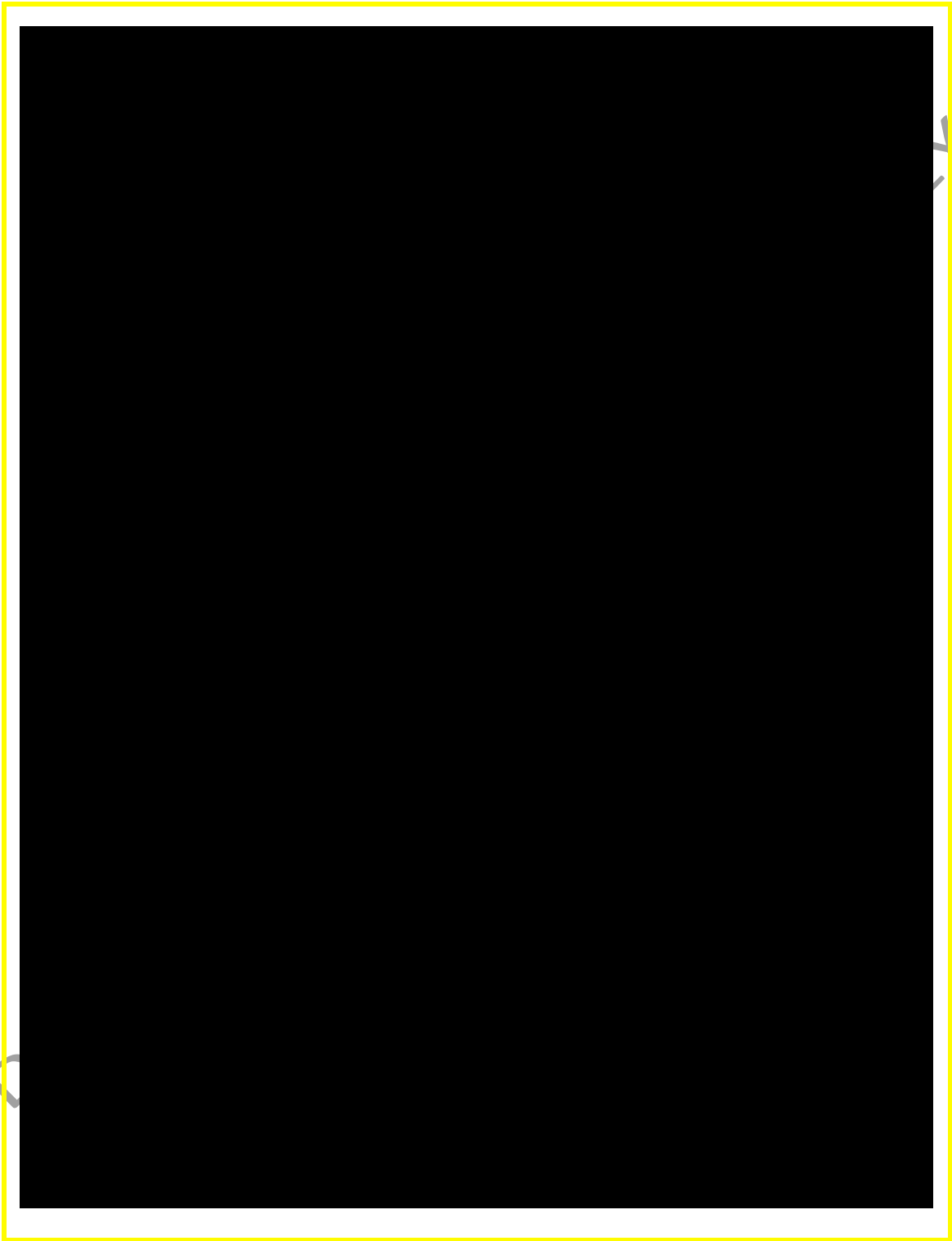
1. Maintain crew safety, ask for law enforcement assistance if available.
2. If altered mental status, check oxygen saturation and option to perform finger stick to measure blood glucose using MEMS approved technique/device limited to providers who have completed the MEMS BG monitoring training program.

### INTERMEDIATE

3. Consider blood glucose if patient with altered mental status. If blood glucose is less than 80 mg/dL, establish IV and contact OLMC for Option of administering Dextrose 25 gm (50 ml of 50% solution IV or 250 ml of 10% solution IV). Recheck blood glucose in 5 minutes.

### CRITICAL CARE / PARAMEDIC

4. Consider blood glucose if patient with altered mental status. If blood glucose is less than 80 mg/dL, establish IV and administer Dextrose 25 gm (50 ml of 50% solution IV or 250 ml of 10% solution IV). Recheck blood glucose in 5 minutes.
  5. If IV unavailable and blood glucose less than 80 mg/dL, consider IO or administer Glucagon 1 mg IM.
- 
6. Contact OLMC for OPTION of Midazolam (Versed) 4 mg IM for patient safety and comfort. Contact OLMC if dosing adjustment needed
-



## Pink (Pediatrics) Summary of Changes

Location of Change (in this document)	Change	Purpose of Change	Expected Impact
Page 130	Added – in the Pediatric Coma Section – Ability for trained EMT-B's to perform glucose testing on pediatric patients with changes in mental status	Trained EMT-B's are performing finger sticks on adults and the MDPB wanted to bring the same diagnostic ability to children with altered mental status	Educational
Page 130	Amended Glucagon Dosing - Glucagon: if less than 3 kg (6.5 lbs) give 0.3 mg/kg IM. If weight is 3 kg or larger, give 1.0 mg IM	Prior Dose was 0.5 mg/kg to a maximum of 1.0. The proposed change better clarifies dosing (1 mg IM in all but the smallest children).	Educational
Page 133	Amended Dosing of Midazolam – IV = 0.15 mg/kg with max of 3 mg (from 0.02 mg/kg). IM = 0.3 mg/kg with max of 5 mg (from 0.2 mg/kg). and Rectal dosing unchanged. Removed – Buccal dosing of Midazolam  Removed – Narcan dosing in the Seizure protocol  Glucagon dosing changed	The IV dose of Midazolam was changed from 0.02 mg/kg to 0.15 mg/kg in the ME EMS errata sheet. Changing the dosing at the IM level reflects the IV dosing changes  Given the IV, IM and PR routes of Midazolam, buccal dosing was felt to be unnecessary  Felt unnecessary in the Sz protocol as Opioid use is infrequently a cause of seizures. Dosing and instructions for use remain in the Pediatric Coma section.  See above	Educational
Page 136	Changed - EMT-B assist administration of	Prior statement included Albuterol and Xopenex. MDPB	Educational

	patient's rescue inhaler – if uncertainty regarding type of inhaler, contact OLMC	felt the use of the term “rescue inhaler” was sufficient	
Page 137	Added OLMC option of nebulized epinephrine in cases of severe respiratory distress with wheezing	The MDPB was interested in adding this as an OLMC option for this subset of patients	Education
Page 145	Added “If delivery has occurred, please transport the child on the mother's chest/abdomen in an effort to keep newborn warm”	Standard practice	Educational

## PEDIATRIC COMA

(Decreased Level of Consciousness)

NEVER GIVE NALOXONE TO A NEONATE

### BASIC

1. Administer O<sub>2</sub> as appropriate PPV if needed
2. Spinal immobilization if indication of trauma
3. Option to perform finger stick to measure blood glucose using MEMS approved technique/device limited to providers who have completed the MEMS BG monitoring training program.
4. Request ALS if available

### INTERMEDIATE

5. Cardiac monitor en route
6. IV, IO, TKO en route (18 or 20 gauge catheter is acceptable for IV)
7. Draw blood as IV established, or do finger stick to measure blood glucose, using MEMS-approved technique/device

- 
8. Contact OLMC for the following OPTION:

- a. **If blood glucose less than 80 mg/dL**, 10% Dextrose (1 ml of D50 in 4 ml IV fluid or use pre-mix) IV, IO, according to the following table:

Weight (Kg/Lbs)	Volume to be infused
10/22	50 ml
20/44	100 ml
30/66	150 ml
40/88	200 ml

- b. If respirations less than 12 per minute AND narcotic overdose suspected:

- i. Naloxone (Narcan) Less than 20 kg: 0.1 mg/kg. If greater than 20 kg or 5 years old or greater, 0.1 – 2 mg IV, IO, IM or Intranasal (may opt to give 2.0 mg as starting dose if using intranasal route). Titrate to improved respiratory drive.

- ii. NOTE: Patients abruptly and fully awakened from narcotic overdose may become combative or suffer acute narcotic withdrawal symptoms. Some drugs such as Propoxyphene, Talwin, or Methadone may require higher doses.

- iii. Once intubated, do not give naloxone.

#### CRITICAL CARE / PARAMEDIC

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#### 2. Contact OLMC for the following:

##### a. If respirations less than 12 per minute AND narcotic overdose suspected:

- i. Naloxone (Narcan) Less than 20 kg: 0.1 mg/kg. If greater than 20 kg or 5 years old or greater, 0.1 – 2 mg IV, IO, IM or Intranasal (may opt to give 2.0 mg as starting dose if using intranasal route). Titrate to improved respiratory drive.
- ii. NOTE: Patients abruptly and fully awakened from narcotic overdose may become combative or suffer acute narcotic withdrawal symptoms. Some drugs such as Propoxyphene, Talwin, or Methadone may require higher doses.

##### iii. Once intubated, do not give naloxone

##### b.

**If blood glucose less than 80 mg/dL**, 10% Dextrose (1 ml of D50 in 4 ml IV fluid or use pre-mix) IV, IO, according to the above table.\*

- c. Glucagon: if less than 3 kg (6.5 lbs) give 0.3 mg/kg IM. If weight is 3 kg or larger, give 1.0 mg IM (if IV, IO access is unavailable for administration of Dextrose.)
-



## PEDIATRIC SEIZURES

### BASIC

1. Open, protect and maintain airway. O<sub>2</sub> as appropriate
2. Spinal immobilization if indicated
3. Protect the patient from self-injury
4. Option to perform finger stick to measure blood glucose using MEMS approved technique/device limited to providers who have completed the MEMS BG monitoring training program.
5. Request ALS if available if history of seizures, if seizure continues, or if unstable vital signs

### INTERMEDIATE

6. Manage airway as needed "See Blue 3 & 5"
7. Cardiac monitor
8. IV, IO en route
9. Draw blood as IV established, or do finger stick, to measure blood glucose using MEMS-approved technique/device

- 
10. Contact OLMC for the following options:
    - a. **If blood glucose less than 80 mg/dL**, 10% Dextrose (1 ml of D50 in 4 ml IV fluid or use D10W) IV, IO, according to the following table:\*

Weight (Kg/Lbs)	Volume to be infused
10/22	50 ml
20/44	100 ml
30/66	150 ml
40/88	200 ml

---

### CRITICAL CARE / PARAMEDIC

11. Administer:
  - a. Midazolam (*Versed*) 0.15 mg/kg IV maximum 3 mg; or contact OLMC if repeat dosing is necessary.
  - b. Alternate routes to IV dosing:

- i. Intramuscular dosing – Midazolam (*Versed*) 0.3 mg/kg IM if IV cannot be established to maximum dose of 5 mg.
- ii. Rectal administration: Midazolam (*Versed*) 0.3 mg/kg PR to a maximum dose of 10 mg.
- iii. Intranasal dosing – Midazolam (*Versed*) 0.2 mg/kg IN over 15 sec – one half of dose into each nostril – to a maximum dose of 6 mg.

---

12. Contact OLMC for the following OPTIONS:

- a. **If blood glucose less than 80 mg/dL**, 10% Dextrose (1 ml of D50 in 4 ml IV fluid or use D10W) IV, IO, according to the above table.\*
  - b. Glucagon: if less than 3 kg (6.5 lbs) give 0.3 mg/kg IM. If weight is 3 kg or larger, give 1.0 mg IM (if IV, IO access is unavailable for administration of Dextrose.)\*
-

## PEDIATRIC RESPIRATORY DISTRESS

### BASIC

1. If adequate ventilation, let child assume position of comfort
2. O<sub>2</sub> – allow patient or parent to assist in administration
3. Attempt to discern between upper airway respiratory distress (stridor) or lower airway respiratory distress (wheezing)
  - a. If stridor is found, proceed to the MEMS Pediatric Respiratory Distress with Stridor Protocol. If wheezing is found, proceed to the MEMS Pediatric Respiratory Distress with Wheezing protocol.
4. Request ALS if available
5. If inadequate ventilation:
  - a. If foreign body suspected, use the AHA Foreign Body Airway Obstruction protocol
  - b. IF CHILD HAS INSPIRATORY STRIDOR, ESPECIALLY IF LEANING FORWARD OR IN THE SNIFFING POSITION, THEN:
    - i. Put child in position of comfort
    - ii. **DO NOT** ATTEMPT ANY PROCEDURE/MANEUVER (INCLUDING EXAMINATION OF OROPHARYNX) WHICH MAY INCREASE CHILD'S ANXIETY AND THEREBY RAISE CHANCES OF LARYNGOSPASM UNLESS ABSOLUTELY NECESSARY TO PRESERVE AIRWAY
6. Open airway if needed, ventilate with bag-valve-mask if inadequate ventilation. In epiglottitis, this may require forceful ventilation, including closure of pop-off valve on BVM, and use of cricoid pressure (Sellick's maneuver) to prevent gastric distention.
7. Constantly monitor airway for patency in any unconscious child

### CRITICAL CARE / PARAMEDIC

1. Proceed to Pediatric Respiratory Arrest (see "Pink 9") as necessary.

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Comment: Need page notation

## PEDIATRIC RESPIRATORY DISTRESS WITH WHEEZING

Wheezing may occur from various etiologies including asthma, inflammation, infections and foreign body.

### BASIC / INTERMEDIATE

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Contact OLMC for the following OPTIONS:

1. Assist the patient in self-administering 5 puffs of their rescue inhaler.
2. If uncertainty regarding the type of inhaler, contact OLMC for permission to assist patient with self-administered bronchodilator (using spacer if available\*). Inform OLMC of the name of the inhaler. OLMC will prescribe the number of puffs.

\* If Spacer unavailable and Intermediate/Critical Care/Paramedic present, they should use nebulizer instead

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### INTERMEDIATE

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3. Contact OLMC to administer Albuterol, 2.5 mg by nebulization (use 3 ml premix or 0.5 ml of 0.5% solution mixed in 2.5 ml of normal saline)
- 

### CRITICAL CARE / PARAMEDIC

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4. If expiratory wheezing with spontaneous ventilation, use the following OPTIONS:

- a. Albuterol 2.5 mg by nebulization. **May repeat 1 time**

**Or**

**(Paramedic Only d and e)**

- b. Ipratropium Bromide 0.5 mg / Albuterol Sulfate 3 mg nebulizer if greater than 1 year of age and more significant respiratory distress, and may repeat one time

**Or**

- c. Ipratropium Bromide/Albuterol Sulfate (Combivent) Inhaler 2 puffs if greater than 1 year of age and may repeat one time in those with more significant respiratory distress – patients receiving Combivent inhaler must be questioned regarding peanut allergies prior to inhaler administration as a peanut allergy is an absolute contraindication to this medication.
- 

5. Contact OLMC for the following options:
- 

- c. Epinephrine: If < 30 kg, 0.15 mg IM (0.15 ml of 1:1,000), If > 30 kg, 0.3 mg IM (0.3 ml of 1:1,000) in anterolateral thigh OR inhalation of nebulized

solution of 1 ml of 1:1,000 epinephrine mixed with 2 ml normal saline solution.

\*

a. Methylprednisolone (Solu-Medrol) 2 mg/kg IV x 1 dose

\* Nebulized Epinephrine may be contraindicated in children with a history of congenital heart disease.

## PEDIATRIC RESPIRATORY DISTRESS WITH INSPIRATORY STRIDOR

Inspiratory stridor may be due to many causes in the pediatric population, including croup, foreign body aspiration, or epiglottitis.

Stridor refers to upper airway obstruction as in laryngotracheitis/croup, and is often accompanied by hoarseness and/or a barking cough (seal-like cough).

As stridor worsens in severity, the following may also be observed: Tachypnea, retractions, accessory muscle use, nasal flaring, fatigue from respiratory effort, and cyanosis.

### BASIC / INTERMEDIATE

1. Humidified O<sub>2</sub>, if available, as appropriate with upright posture
2. If needed, assist ventilations with PPV using 100% O<sub>2</sub>
3. Request ALS if available

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### CRITICAL CARE / PARAMEDIC

4. Contact OLMC for the following OPTION:
  - a. Inhalation of nebulized solution of 1 ml 1:1,000 Epinephrine mixed with 2 ml normal saline solution.\*

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\* Nebulized Epinephrine may be contraindicated in children with a history of congenital heart disease.

## **PEDIATRIC RESPIRATORY FAILURE**

**(with or without obstruction)**

Prehospital providers should consider patient age, diagnosis, transport time, provider experience, and effectiveness of ongoing bag-mask ventilation in considering whether to continue with bag-mask ventilation versus proceeding to further airway management procedures. Bag-mask ventilation has been shown to be equivalent to endotracheal ventilation in pediatric patients in most situations with short transport times. If suspected opiate overdose, refer to naloxone dosing under “Pediatric Coma Protocol”

### **BASIC**

1. Follow AHA Respiratory Arrest procedure utilizing bag valve mask and 100% O<sub>2</sub> for ventilation. Use the AHA foreign body obstructed airway procedure as necessary.
2. Request ALS if available

### **INTERMEDIATE / CRITICAL CARE / PARAMEDIC**

3. Secure airway, including airway management as needed “See Blue 3 & 5”
4. Magill forceps if indicated
5. Cardiac monitor IV, IO en route
6. Pulse oximetry if available
7. OG Tube (Paramedic Only)

## PEDIATRIC DIABETIC EMERGENCIES

### BASIC

1. O<sub>2</sub> as appropriate
2. Request ALS if available
3. If patient is conscious and able to swallow, give glucose orally
4. Option to perform finger stick to measure blood glucose using MEMS approved technique/device limited to providers who have completed the MEMS BG monitoring training program.

Glucose paste is to be administered as soon as possible in patients presenting with the signs/symptoms of diabetic emergency.

### INTERMEDIATE

5. IV en route
6. Draw blood as IV established or do finger stick, to measure blood glucose, using MEMS-approved technique/device
7. Cardiac monitor

- 
8. If blood glucose less than 80 mg/dL, contact OLMC for OPTION of administering 10% Dextrose (D10W) IV, IO. Recheck blood glucose in 5 minutes.
  9. If blood glucose greater than 300 mg/dL, give 10 ml/kg NS fluid challenge.

Use the following table for D10 dosing:

Weight (Kg/Lbs)	Volume to be infused
10/22	50 ml
20/44	100 ml
30/66	150 ml
40/88	200 ml

EMT-I, in consult with OLMC, may modify the Paramedic response as appropriate.

### CRITICAL CARE / PARAMEDIC

10. Dextrose
  - a. 10% Dextrose (D10W) IV, IO according to the above table. Recheck blood glucose in 5 minutes.
  - b. If blood glucose greater than 300 mg/dL, give 10 ml/kg NS fluid challenge.



- c. If IV, IO access is unavailable administer Glucagon: if less than 3 kg (6.5 lbs) give 0.3 mg/kg IM. If weight is 3 kg or larger, give 1.0 mg IM

11. Repeat Glucose measurement

---

12. Contact OLMC for OPTION of repeating Dextrose

## PEDIATRIC MEDICAL SHOCK

If Trauma related “See Green 10”

Pediatric Shock is well established before the appearance of classic signs and symptoms. The earliest sign is delayed capillary refill. This may also be accompanied by altered level of consciousness, rising pulse and increasing respiratory rate. By the time blood pressure drops, circulatory collapse is near.

See “Red 17: Cardiogenic Shock” if appropriate

See “Green 13: Hypovolemic Shock” if appropriate

See “Yellow XXX: Allergy and Anaphylaxis” if appropriate

See “Blue X: Pediatric Airway Algorithm” if appropriate

### Definition of Severe Inflammatory Response Syndrome (SIRS), Sepsis, Severe Sepsis and Septic Shock

Variable	Definition	
SIRS	Greater than or equal to 2 of the following	Temp > 38.3°C or < 36°C HR > 90 bpm Respiratory Rate > 20 bpm Hyperglycemia > 120 mg/dl <sup>1</sup> Altered Level of Consciousness Decreased Capillary Refill Lactate > 2 mmol/L
Sepsis	SIRS + a presumed or identified source of infection	
Severe Sepsis	Sepsis + one or more organ dysfunction <sup>2</sup> , hypotension before fluid challenge, or Lactate > 4 mmol/L	
Septic Shock	Severe Sepsis + Hypotension <sup>3</sup> despite fluid challenge	

Table adopted from 2001 SCCM/ESICM/ACCP/ATS/SIS International Sepsis Definitions Conference.

<sup>1</sup>Hyperglycemia without history of diabetes, Hypoglycemia, without diabetes, in an immunocompromised patient increases suspicion of infection.

<sup>2</sup>Organ dysfunction can be defined as: respiratory failure, acute renal failure, acute liver failure, coagulopathy, or thrombocytopenia. Laboratories that will suggest organ dysfunction include: PaO<sub>2</sub>(mmHg)/FiO<sub>2</sub> <300, Creatinine >2.0 mg/dL OR Creatinine Increase >0.5 mg/dL, INR >1.5, PTT >60 sec, Platelets < 100,000/uL. Total bilirubin >4 mg/dL

<sup>3</sup>Systolic Blood Pressure < 90 mmHg or Mean Arterial Pressure < 65 mmHg

### BASIC

1. Attempt to identify cause (i.e. allergic reaction)
2. O<sub>2</sub> and airway management as appropriate

3. Keep child warm and dry
4. Request ALS intercept
5. Transport

## INTERMEDIATE

6. Consider causes
  - a. Massive GI bleed, vomiting, diarrhea, - Treat per “Green 13: Hypovolemic Shock”
  - b. Cardiogenic shock - Treat per “Red 17: Cardiogenic Shock”
  - c. Anaphylaxis - Treat per “Yellow X: Allergy and Anaphylaxis”
  - d. Undifferentiated Shock or Suspected Severe Sepsis
    - i. Assess for pulmonary edema (crackles in the lungs)
    - ii. If available and trained perform point of care lactate
      - A. If POC lactate > 4 and no evidence of pulmonary edema, 40 ml / kg NS bolus
    - iii. If POC lactate not available and no evidence of pulmonary edema
      - A. Contact OLMC for OPTION of 20 ml / kg NS bolus
    - iv. Notify receiving hospital

## CRITICAL CARE / PARAMEDIC

7. For presumed septic shock or shock of unknown origin
  - a. Treat as per intermediate 6
  - b. If no response to initial treatment:
    - i. Contact medical control to discuss additional fluid bolus versus initiating Dopamine infusion. **NOTE: Dopamine in the pediatric patient MUST be infused by a pump.**
      - A. Dose 5-20 mcg / kg / min (2-9 mcg / pound / min)
      - B. Titrate to maintain SBP greater than 80 mm Hg
8. Additionally, if the patient is found to have Adrenal Insufficiency (via medic alert bracelet, patient records, or family/staff reports), administer methylprednisolone (Solu-Medrol) as follows:
  - a. Pediatrics - methylprednisolone (Solu-Medrol) 2mg/kg IV, IM, or IO x 1 dose

Weight Based Dopamine Dosing Chart

Weight (lbs)	10	15	20	25	30	35	40	50	60
Weight	5	6	8	10	13	15	18	22	25

(kg									
Gtts / min (60 gtt set)									

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**PEDIATRIC CARDIAC ARREST**  
(non-breathing, pulseless patient)

**Pediatric cardiac dysfunction is usually due to a respiratory cause and is thus more likely to initially respond to effective oxygenation and ventilation, then fluid administration – and then medications may be needed. Defibrillation alone is rarely successful.**

**BASIC**

1. 100% O<sub>2</sub> and ventilate with bag valve mask
2. CPR first, and use AED per current AHA guidelines
3. Request ALS if available

**INTERMEDIATE / CRITICAL CARE / PARAMEDIC**

4. Manage airway as needed “See Blue 3 & 5” (consider possibility of foreign body obstruction)
5. IV, IO
6. Cardiac monitor and treat dysrhythmias according to protocol using pediatric dosages listed below
7. For traumatic cardiac arrest give IV, IO bolus of 20 ml/kg IV fluid. **May be repeated once.**

- 
8. Contact OLMC for option of medications, fluid boluses, defibrillations, or other ongoing interventions that may be necessary.
-

## PEDIATRIC CARDIAC ARREST DOSAGES

Prehospital providers should consider patient age, diagnosis, transport time, provider experience, and effectiveness of ongoing bag-mask ventilation in considering whether to continue with bag-mask ventilation versus proceeding to endotracheal intubation. Bag-mask ventilation has been shown to be equivalent to endotracheal ventilation in pediatric patients in most situations with short transport times.

Atropine 0.02 mg/kg	<b>IV, IO:</b> Minimum dose: 0.1 mg Maximum single dose: 0.5 mg (child), may repeat once
Epinephrine* (bradycardia)	<b>IV, IO:</b> 0.01 mg/kg (1:10,000, 0.1 ml/kg, to a maximum single dose of 1 mg)
Epinephrine* (Asystole/pulseless arrest)	<u>FIRST DOSE:</u> <b>IV, IO:</b> 0.01 mg/kg (1:10,000, 0.1 ml/kg)  <u>SUBSEQUENT DOSES:</u> <b>IV, IO:</b> 0.01 mg/kg (1:10,000, 0.1 ml/kg) Repeat every 3-5 minutes
Amiodarone	5 mg/kg IV/IO bolus; can repeat up to total dose of 15 mg/kg (2.2 grams in adolescents) (maximum single

Synchronized Cardio version: 0.5 – 1.0 J/kg (initial); 2 J/kg (subsequent)

Defibrillation: 2 J/kg (initial); 4 J/kg (subsequent)  
or equivalent biphasic energy

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## CHILDBIRTH

### BASIC / INTERMEDIATE / CRITICAL CARE / PARAMEDIC

1. O<sub>2</sub> as appropriate
2. Encourage mother to NOT bear down
3. If hypotensive, roll patient onto left hip
4. If the presenting part is the cord, apply pressure to the baby with a sterile, gloved hand to keep pressure off the cord. Raise mother's hips onto pillows. Keep cord warm. Do not clamp or cut cord.
5. Request ALS if available and DO NOT DELAY TRANSPORT.
6. If baby's head is delivering:
  - a. Do not hurry or slow delivery
  - b. Check to see if cord is wrapped around neck. If so, attempt to unwrap the cord. Failing this, clamp and cut immediately and deliver child.
  - c. Double clamp the cord at least 4 inches from baby and cut between clamps.
  - d. Dry baby, examine and keep warm (may place next to mother's skin). As soon as possible, enable child to nurse at mother's breast.
  - e. Assess APGAR SCORE at 1 and 5 minutes "See Pink 16"
  - f. Do not externally massage the uterus en route until placenta has delivered
  - g. Do not forcibly remove placenta
  - h. If placenta is delivered, wrap and package with cord intact
7. If delivery has occurred, please transport the child on the mother's chest/abdomen in an effort to keep newborn warm

## APGAR SCORE

Assess the baby at 1 minute and again at 5 minutes

DO NOT DELAY RESUSCITATION to obtain APGAR Score.

A score of less than 7 suggests need for resuscitation with suction, ventilation, and ALS back up.

### SCORE

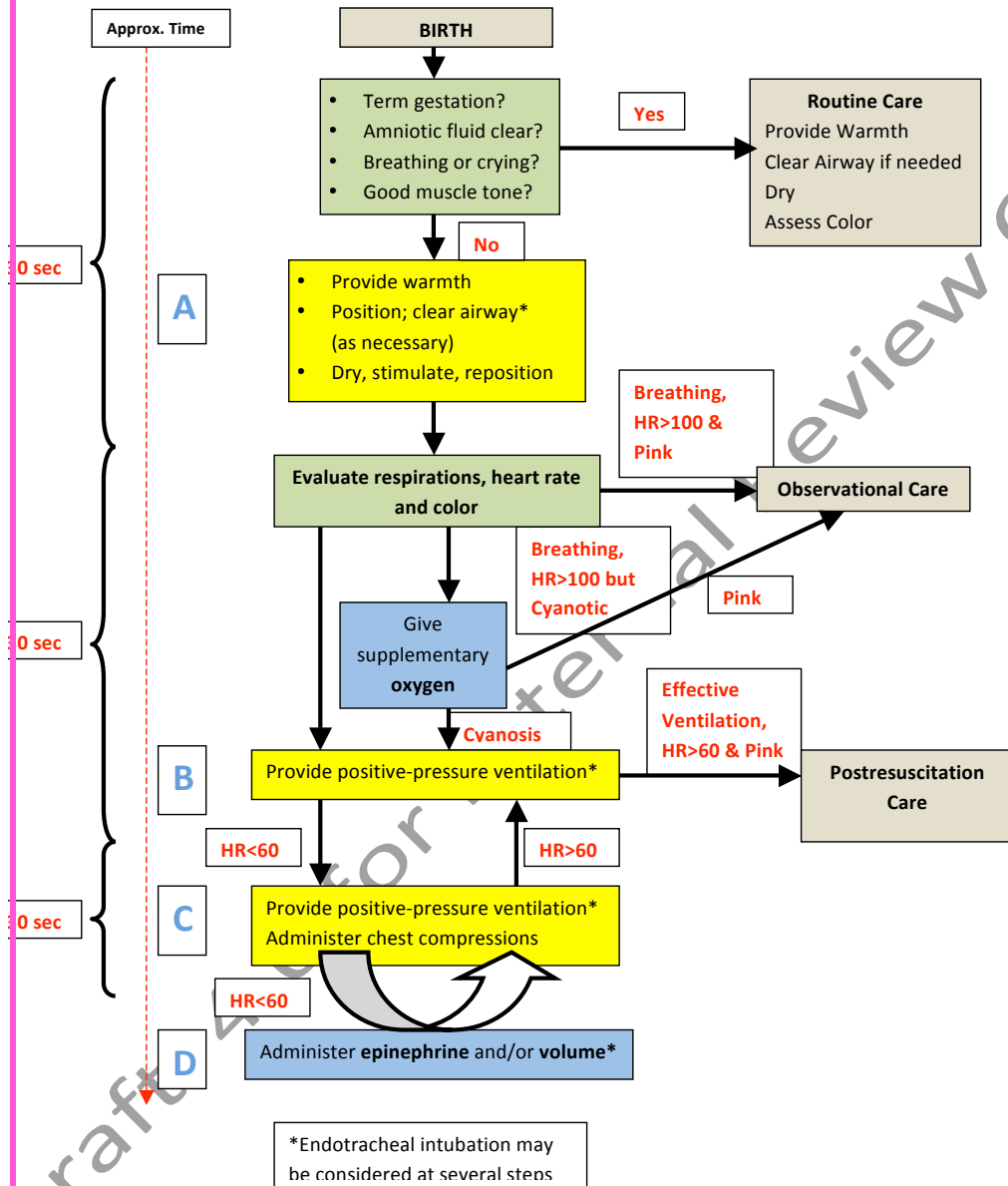
		0	1	2
A	Appearance	Blue or pale	Body pink Hands blue	Pink
P	Pulse	Absent	less than 100	greater than 100
G	Grimace*	None	Grimace	Cough
A	Activity**	Flaccid	Some	Good
R	Respiration	Absent	Weak	Good

\* Tested by a suction catheter or bulb syringe tip gently placed in the nose or mouth.

\*\* Amount of spontaneous flexion of extremities.



# NEONATAL RESUSCITATION



**NOTE:** Remember to obtain APGAR score on baby "See Pink 16"

**NEVER GIVE NALOXONE TO A NEONATE.**



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## NORMAL PEDIATRIC VITAL SIGNS

### Normal Pediatric Vital Signs

	Systolic	Pulse Awake	Pulse Sleeping	Respirations
<u>Newborn-3 months</u>	<u>&gt;60mm Hg</u>	<u>85-205</u>	<u>80-160</u>	<u>30-60</u>
<u>3 months-2 years</u>	<u>&gt;70mm Hg</u>	<u>100-190</u>	<u>75-160</u>	<u>24-40</u>
<u>2-10 years</u>	<u>See below</u>	<u>60-140</u>	<u>60-90</u>	<u>18-34</u>
<u>&gt;10 years</u>	<u>&gt;90mm Hg</u>	<u>60-100</u>	<u>50-90</u>	<u>12-16</u>

Note: Estimated weight in kilograms:  $[2 \times (\text{age in years})] + 8$

Typical Systolic BP for a child 1-10 years of age:  $90 + (\text{age in years} \times 2)$

Lower Limits of Systolic BP for a child 1-10 years :  $70 + (\text{age in years} \times 2)$

### Modified GCS for Infants and Children

	Child	Infant	Score
<b>EYE OPENING</b>	Spontaneous	Spontaneous	4
	To Speech	To Speech	3
	To Pain Only	To Pain Only	2
	No Response	No Response	1
<b>BEST VERBAL RESPONSE</b>	Oriented, Appropriate	Coos and Babbles	5
	Confused	Irritable Cries	4
	Inappropriate Words	Cries to Pain	3
	Incomprehensible Sounds	Moans to Pain	2
	No response	No Response	1
<b>BEST MOTOR RESPONSE</b>	Obeys Commands	Moves Spontaneously/Purposefully	6
	Localizes Painful Stimuli	Withdraws to Touch	5
	<u>Withdraws to Pain</u>	<u>Withdraws</u> in response to Pain	4
	Flexion in Response to Pain	Abnormal Flexion Posture to Pain	3
	Extension in Response to Pain	Abnormal Extension Posture to Pain	2
	No Response	No Response	1

## ENDOTRACHEAL TUBE SIZES

Equipment	GREY 3-5kg	PINK Small infant 6-7 kg	RED Infant 8-9 kg	PURPLE Toddler 10-11kg	YELLOW Small child 12-14 kg	WHITE Child 15-18kg	BLUE Child 19-23kg	ORANGE Large Child 24-29kg	GREEN Adult 30-36kg
Resuscitation Bag		Infant or child	Infant or child	Child	Child	Child	Child	Child	Adult
O2 Mask (NRB)		Pediatric	Pediatric	Pediatric	Pediatric	Pediatric	Pediatric	Pediatric	Pediatric or Adult
Oral airway (mm)		50	50	60	60	60	70	80	80
LMA Sizes	1.0	1.5	1.5	2.0	2.0	2.0	2.5	2.5	3.0
Laryngoscope Blade (size)			1 straight	1 straight	2 straight	2 straight	2 straight or curved	2 straight or curved	3 straight or curved
ET Tube		3.5 uncuffed	3.5 uncuffed	4.0 uncuffed	4.5 uncuffed	5.0 uncuffed	5.5 uncuffed	6.0 cuffed	6.5 cuffed
ET Tube Insertion length (cm)	3 kg 9-9.5 4 kg 9.5-10 5 kg 10-10.5	10.5-11	10.5-11	11-12	13.5	14-15	16.5	17-18	18.5-19.5
Stylet		6	6	6	6	6	14	14	14
Suction Catheter (F)		8	8	10	10	10	10	10	10-12
BP Cuff	Neonate	Infant or child	Infant or child	Child	Child	Child	Child	Child	Small Adult
IV Cath (Ga)		22-24	22-24	20-24	18-22	18-22	18-20	18-20	16-20
IO (Ga)		18/15	18/15	15	15	15	15	15	15
NG Tube (F)		5-8	5-8	8-10	10	10	12-14	14-18	16-18

For ET size, pinky finger diameter in a child affords an acceptable approximation of OD. The formula is the following: "Age (in years) / 4 + 4" and the Broselow-Hinkle Tape may be used for ID determination. Using a tube one size larger or smaller than this guideline is also acceptable.

## Grey (Operations) Summary of Changes

Location of Change (in this document)	Change	Purpose of Change	Expected Impact
Pg 151	Added language around termination of resuscitation	Mirror the efforts from the Red section	Educational
Pg 155	Added language allowing for alternates to the MetTag during MCI triage	While MetTags are a common triage tool, other tools such as the SMART tags have gained popularity. Endorsing no one tag allows for local options	Educational
Pg 165 – Transport	<p>Changed language from “Competent” to “Decision making capacity”</p> <p>Added the following:  “EMS System initiated patient sign offs are tremendously risky interactions and must be minimized at all costs. These sign offs are not condoned by Maine EMS and, if occur, must be reviewed with OLMC. The service is expected to review all of these events through the service’s quality assurance mechanism. Patient medical records must be completed for all of these interactions.”</p>	<p>Competency is determined only after detailed psychological evaluations. We are ultimately looking for presence or absence of decision making capacity</p> <p>EMS initiated patient sign offs remain one of the most dangerous patient interactions with the potential for very bad patient outcomes. This is an effort to remind the provider of the danger of these interactions and to minimize these EMS system initiated patient sign offs</p>	Educational

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## DO NOT RESUSCITATE (DNR) GUIDELINES

### I. When to Start Resuscitation:

As soon as the absence of pulse and respiration is established.

### II. When Not to Start Resuscitation (Assuming normothermic body):

- A. Any patient displaying obvious and accepted signs of irreversible death such as rigor mortis, dependent lividity, decapitation, decomposition, incineration, or other obvious lethal injury when the cardiac monitor - if available - shows asystole or agonal rhythm.
- B. Major blunt trauma victims who have no respiration and no pulse, no sign of life at the time of Maine EMS licensed crewmember arrival, and whose cardiac monitor - if available - shows asystole or an agonal rhythm.
- C. When a physician Do Not Resuscitate (DNR) order is presented in one of three forms:
  - 1. EMS DNR orders from other state EMS/DNR programs. If the order or device (e.g., plastic bracelet, jewelry, or card) appear to be in effect, and understandable to the crew, follow the order's specific instructions. If there are no specific instructions beyond "DNR", follow Maine EMS Comfort Care/DNR Guidelines.
  - 2. Non-EMS DNR Orders - A written, original DNR order executed by a patient's personal physician should be honored if it is understandable to the crew and if it is dated within 1 (one) year. Follow the order as written. If it is non-specific as to care to provide or withhold, follow the MEMS Comfort Care/DNR guidelines.
  - 3. Maine EMS Comfort Care / DNR Program - A Maine EMS Comfort Care/DNR order does not have an expiration date. Once activated, it remains in effect until the patient or someone acting on their behalf as described and authorized on the Comfort Care/DNR form cancels it. (Note: Although no longer distributed by Maine EMS, extant DNR/Comfort Care "orange" forms, wallet cards and plastic bracelets remain valid.)
- D. When a signed Maine EMS Do Not Resuscitate Directive form or Maine EMS-approved Do Not Resuscitate Directive jewelry is presented to EMS personnel. Once executed by the patient and signed by a physician, physician's assistant or nurse practitioner, the Do Not Resuscitate Directive remains in effect until the expiration date on the form or, if no expiration date is noted on the form, until the patient cancels it.

### III. Treatment/Comfort Care

- A. When treating a patient with a Maine EMS Comfort Care/DNR Order or Do Not Resuscitate Directive, the responding EMS provider should perform routine patient assessment and resuscitation or intervention until EMS personnel verify:
  - 1. That an EMS Comfort Care/DNR Order or Do Not Resuscitate Directive exists; or,
  - 2. That a Maine EMS-approved EMS Comfort Care/DNR wallet card, plastic bracelet or Maine EMS-approved DNR jewelry is present, intact and not defaced. The plastic bracelet may be worn on the wrist or ankle or on a necklace; or,

3. That Maine EMS-approved Do Not Resuscitate Directive jewelry is present, intact and not defaced; and,
4. The identity of the patient through family or friends present, or with photo ID such as a driver's license. A good faith effort only is required.

**B. Follow these EMS Comfort Care/DNR procedures in all cases:**

**1. These comforting interventions are encouraged:**

- a. Open the airway manually (NO intubation, No BVM unless invited by conscious patient);
- b. Suction and provide oxygen;
- c. Make the patient comfortable (position, etc.);
- d. Control bleeding;
- e. Pain and other medications of comfort to a conscious patient only (ALS per On Line Medical Control);
- f. Be supportive of the patient and family;
- g. Contact patient's physician or On Line Medical Control if questions or problems.

**2. Resuscitative measures to be avoided:** (to be withheld, or withdrawn if resuscitation has begun prior to confirmation of EMS Comfort Care/DNR Order or Do Not Resuscitate Directive status).

- a. CPR;
- b. Intubation (ET Tube, or other advanced airway management); surgical procedures;
- c. Defibrillation;
- d. Cardiac resuscitation medications;
- e. Artificial ventilation by any means;
- f. Related procedures per On Line Medical Control.

**IV. Revocation, Documentation & When to Stop Resuscitation**

**A. Who may revoke an EMS Comfort Care/DNR Order or Maine Do Not Resuscitate Directive:**

1. The patient (by destroying EMS Comfort Care/DNR Order Form, wallet card, plastic bracelet and DNR jewelry, or by destroying the Do Not Resuscitate Directive and DNR jewelry, or verbally withdrawing the order or directive);
2. For the EMS Comfort Care/DNR Order form only:
  - a. The patient's physician who signed the order;
  - b. The Authorized Decision-Maker for the patient who signed the order.

**B. Documentation:**

1. Use the Maine EMS patient/run report.



2. Describe assessment of patient's status.
3. Document which identification (i.e., form, wallet card, plastic bracelet or DMR jewelry) was used to confirm EMS Comfort Care/DNR or Do Not Resuscitate Directive status and indicate that it was intact and not canceled.
4. Indicate the patient's physician's name, on the patient/run report.
5. If the patient has expired on arrival, comfort the family and follow your EMS agency's procedure for death at home. A Maine EMS patient/run report still needs to be completed.
6. If transporting the patient, EMS providers should keep the original EMS Comfort Care/DNR Order Form, wallet card, plastic bracelet, Do Not Resuscitate Directive Form or DNR jewelry with the patient. A patient may be transported with a photocopy of the EMS Comfort Care/DNR form or Do Not Resuscitate Directive, provided that EMS personnel have verified the original document.

**C. When to Stop Resuscitation:** Resuscitation should be terminated:

**Unwitnessed Arrest:**

8. When the patient regains pulse / respiration
9. When the patient is in asystole or unresponsive to Advanced Cardiac life support efforts for > 10 minutes.
10. When irreversible signs of death, such as dependent lividity, pupils fixed and dilated, palpable hypothermia ( not from exposure) and no audible heart sounds are noted in patient with unknown downtime or downtime > 20 minutes.
11. When the rescuers are physically exhausted or when equally or more highly trained health care personal take over
12. When it is found that the patient has a DNR order or POLST form.
13. Continue resuscitation if conditions on scene are NOT amenable to cessation of resuscitation
14. Continuation of resuscitation beyond these protocols must be in consultation with OLMC

**Witnessed arrest:**

8. When the patient regains pulse/ respiration
9. When the patient is in asystole or unresponsive to advanced cardiac life support protocols performed by Critical Care EMT/ Paramedic for >20 minutes.
10. In the absence of ALS, when the same Maine EMS licensed crewmember has documented the absence of all vital signs for 20 minutes, in spite of BLS, except in the case of hypothermia.
11. When the rescuers are physically exhausted or when equally or more highly trained health care personal take over.
12. When it is found that the patient has a DNR or POLST form.
13. Continue resuscitation if conditions on scene are NOT amenable to cessation of resuscitation
14. Continuation of resuscitation beyond these protocols must be in consultation with OLMC

**V. Management of Bodies**

If resuscitation efforts are discontinued, arrangements should be made with On Line Medical Control with regards to disposition of the body. Contact your local ED with regard to tissue donation options and procedures in advance.

## DEATH SITUATION GUIDELINES FOR EMERGENCY MEDICAL RESPONDERS

**PURPOSE:** Development of DEATH SITUATION PROCEDURES by Emergency Medical Services.

**PREPARED JOINTLY BY:** Attorney General, Office of Chief Medical Examiner, and Maine State Police.

**GENERAL AIM:** Preservation of scene, including body as found, for investigative purposes within practical limits consistent with the role and responsibilities of emergency medical care givers.

### Death Situation Guidelines

**I. Preserve life:** While forensic guidelines emphasize that the scene should not be disturbed, the first and most important course of action is to follow all usual procedures to ensure the preservation of life.

**II. Once Death is confirmed:** *If the decedent is clearly dead, the body should not be moved or disturbed unless there is a danger that the body may be lost or further damaged.*

- a. Maine statutes do not require a pronouncement of death.
- b. The scene should be secured and left undisturbed.
  - i. If the police are present, they should take charge in order to determine whether the case falls under the jurisdiction of the Office of Chief Medical Examiner (OCME) or may be certified by the private attending physician.
  - ii. If there is no police officer present, EMS should call the local police or call the OCME directly to report the case, so that a determination may be made as to the need for further investigation into the cause and manner of death. OCME emergency line to report deaths: 1-800-870-8744.
- c. **Tubes and Medical Devices** should be left in place. Certain reusable equipment may be removed to resupply the ambulance; however written documentation of any such action must be given to investigators.
- d. Any clothing or property should be left undisturbed.

**III. What is a Medical Examiner (ME) case?:**

- a. Any suspected HOMICIDE
- b. Any suspected SUICIDE
- c. Any death involving any ACCIDENT or INJURY
- d. Any death of a CHILD
- e. Any death in CUSTODY

- f. Deaths caused by SUSPECTED GROSS NEGLIGENCE during a Medical Procedure
- g. SUDDEN DEATH from an UNKNOWN cause or any death where there is no private attending physician
- h. UNIDENTIFIED persons
- i. OCCUPATIONAL Deaths (Work related)
- j. Unnatural Deaths in a Mental, Residential Care of DHS Facility
- k. Any death that might ENDANGER or THREATEN the Public Health

#### **IV. Deaths in Children:**

- a. All deaths in children under the age of three automatically become medical examiner cases unless the death is expected based on previously diagnosed natural disease.
- b. Determination of the cause of death in infants and children is very difficult. While the OCME understands the concerns of the parents, the child must be left undisturbed until investigating police officers have finished the initial investigation. SIDS is not an acceptable reason to transport a deceased infant or allow the infant to be moved prior to investigation.

#### **V. Reports and follow-up on Medical Examiner cases:**

- a. If families have questions, they may be referred to the OCME. Families should call the office using the 24 hour business line at 624-7180
- b. Copies of EMS run sheets should be given to police investigators and/or the OCME.
- c. If any EMT wishes follow-up information on any specific case, or if there is a question of infectious exposures, call the OCME on the business line, 624-7180.

## MASS CASUALTY / DISASTERS / HAZMAT

**GENERAL RESPONSIBILITY FOR DECEASED PERSONS:** The Office of Chief Medical Examiner is responsible for deceased victims of mass disasters including identification and removal from the scene. The Office of Chief Medical Examiner (1-800-870-8744, restricted emergency call number) should be informed immediately of any multiple fatality situations.

1. **BODIES SHOULD BE LEFT IN PLACE AT SCENE** except when they must be moved to preserve them from destruction or when they block access. The resting place of the victim may be critical for identification of the body and/or reconstruction of the incident. They can be tagged as fatalities to prevent other medical personnel from repeating examination.
2. **IF DEATH OCCURS EN ROUTE TO THE HOSPITAL**, the body need not be returned to the scene but can be brought to the hospital or other suitable storage place as determined by distances and needs of other patients in the ambulance. If the body is left anywhere other than the hospital or designated temporary morgue, the body should be tagged and the Office of Chief Medical Examiner should be advised.
3. **THE SITE A VICTIM IS REMOVED FROM SHOULD BE NOTED** on a tag along with the name and agency of the person who removed it whenever removal is needed and in cases of death after removal. Such information may be critical for identification of the body and/or reconstruction of the accident.
4. **IF AN IDENTIFICATION OF A PATIENT IS MADE**, a tag with at least the name and date of birth of the patient/deceased along with the identifier's name, relationship, address and where he/she can be located should be put on the body.
5. **PERSONAL PROPERTY SHOULD BE LEFT WITH THE BODY** including clothing removed from a patient if the victim dies. Nothing should be removed from those already deceased.

## **MASS CASUALTY / DISASTERS / HAZMAT**

(Continued)

Consistent with New England EMS Council MCI Management the action priorities for the first medical crews arriving on the scene are:

1. Assess and avoid exposure to existing dangers
2. Notify dispatch of type of MCI and estimate of number and type of patients
  - a. Request EMS, fire, police assistance
  - b. Request hospital notification
3. First ambulance or other vehicle with medical frequencies becomes EMS command vehicle – locate near fire and police command vehicles. Strip equipment/supplies – place in equipment area (near planned patient collection/treatment area).
4. Designate, in the following order, the following positions as qualified personnel become available:

**EMS CONTROL OFFICER** – Reports to Incident Commander. Responsible for overall patient triage, treatment, and transportation. Procures EMS back-up, supplies, equipment, transport vehicles as needed, supervises and assigns all other medical personnel.

**PRIMARY TRIAGE OFFICER** – Rapidly assesses all patients then assigns personnel to provide treatment to those patients in most need of immediate treatment, who will most benefit from immediate care with the resources available. Treatment is limited to:

- Bleeding – rapid pressure dressing if severe
- Airway – reposition patient
- Shock – elevate extremities

**SECONDARY TRIAGE OFFICER** – Rapidly tags all patients, or assigns personnel to do tagging (with METTAGS, SMART Tags, or other locally approved Triage System) and, supervises immobilization after classification, and oversees transfer to collection/treatment area.

**Tag categories are:**

**RED (I):** Conditions requiring immediate transport by ambulance to prevent jeopardy to life or limb and which will not unduly deplete personnel/equipment resources (examples: progressive shock, major blood loss, major multiple injuries, severe respiratory distress. Cardiac arrest – only if personnel can be spared).

**YELLOW (II):** Not requiring immediate transport to prevent jeopardy to life or limb, but eventually will require ambulance transport to hospital for attention.

**GREEN (III):** Minor conditions probably not requiring ambulance transport to hospital.

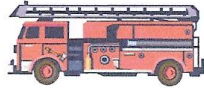
**BLACK (O):** Are obviously dead, or dying from lethal injuries, or requiring CPR when no personnel available to do so without compromising other patients.

**TREATMENT OFFICER** – Sets up / supervises patient collection / treatment area. Reassesses and retags (if necessary) patients, assigns patients and personnel to treatment areas. Prioritizes for transport. Coordinates with Loading/Transport officer to make single radio transmission to receiving facility (pt. ID#, METTAG priority, nature of injury, ambulance, and ETA ONLY).

**LOADING OFFICER** – Stages ambulances in holding area. Instructs crews to put all available equipment in equipment area. Assigns patients to vehicles. Directs drivers to hospital(s). Instructs not to contact hospital unless OLMC required for condition change. Notifies hospital, or coordinates communication to hospital notification times, patient ID#'s and destination of all transporting vehicles.

**SUGGESTED SCENE ORGANIZATION:**  
**NOT FOR HAZMAT**

**INCIDENT COMMAND POST**



**EMS CONTROL OFFICER**

**EQUIPMENT**

**AMBULANCE**

**LOADING**

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E**

**RED**

**PRIMARY  
TRIAGE  
OFFICER**

**LOADING  
OFFICER**



**TREATMENT  
OFFICER**

**YELLOW**

**SECONDARY  
TRIAGE  
OFFICER**

**GREEN**



**TRIAGE / HOLDING AREA**

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## SEXUAL ASSAULT VICTIM

### ALL LEVELS

1. Treat any life-threatening emergency first and according to these protocols.
2. Try to attend to maintenance of forensic evidence. Try not to cut through tears or stains in clothing. Do not cleanse any skin area more than necessary to provide immediate care.
3. If the patient so desires and/or mandated reporting is indicated, police should be called if they have not already been notified.
4. If no life-threatening situation is present, prehospital care may require waiting for police to secure the scene which is a potential crime scene.
5. Victims of sexual assault commonly have much guilt, and may require psychological support. Please respect the stress that they are enduring.
6. By nature of this event, any touch may be traumatic for this patient. Overtly and repeatedly explain what you are doing to try to lessen the impact of procedures and touching.
7. Advise the patient not to eat, drink, smoke, bathe, change clothing or go to the bathroom if at all possible in order to preserve any forensic evidence. If they must urinate, request that they do not wipe.
8. If the patient has removed any clothing worn in the assault, each piece of clothing should be separately bagged in paper bags and brought to the hospital with the patient.
9. When transporting the patient, it is preferable whenever possible to have a same sex provider as the primary provider. If the assault is a same sex assault, than a provider of the opposite sex may be more comfortable for the patient.
10. To maintain privacy and confidentiality, use a landline for hospital reporting whenever possible and do not clarify the type of assault, only that you are transporting a "victim of assault."
11. The patient should be encouraged to go to the hospital for a sexual assault forensic examination that would allow not only the option to have collection of forensic evidence, but also treatment of possible injuries and the chance to obtain pregnancy and sexually transmitted disease prophylactic treatment.
12. If the patient refuses treatment and/or transportation to the hospital, document all findings and observations as completely as possible. When signing the patient off at the scene, try to have a police officer witness this sign off.

## **CHILD ABUSE MANAGEMENT AND REPORTING**

### **All levels**

- Child abuse and child neglect are sufficiently widespread to guarantee that virtually every EMS provider will encounter them at least once during his/her career.
- It is estimated that approximately 2-3 million cases occur each year or approximately 11 cases per every 1,000 children within the U.S. Each year at least 2,000 children die from physical abuse.
- The most commonly identified forms of abuse by the EMS provider are physical abuse and severe physical neglect, although sexual abuse may on occasion be observed.
- The EMS provider must at all times demonstrate and maintain a supportive and non-judgmental attitude with primary caregivers. Accusation and confrontation delay immediate treatment as well as transportation to a definitive care facility.
- When abuse is a possibility the healthcare professional has two major responsibilities: first, to provide medical care to the child; and second, to collect and document all information that may possibly establish the occurrence of abuse or neglect. Refrain from asking the child too many questions and specifically do not ask any leading questions – keep questions simple and open-ended such as “What happened?” and “Are you hurt?”
- As an EMS provider, you must report immediately to Child Protective Services any child whom you have “reasonable cause to suspect” has been abused or will be abused. Failure to do so is punishable as a civil violation. It is not enough to tell someone else of your suspicions. If a child is abused and unreported, there is a 50% chance that the child will be abused again and a 10% chance that the child will die from future abuse. (Title 22, Subchapter II, subsection 4011)

### **Possible Indicators of Abuse**

1. Injured child under two years of age, especially hot water burns or fractures
2. Facial, mouth, or genital injuries
3. Multi-planar injuries (front and back, right and left) – especially when not over bony prominences
4. Poor nutrition or poor care
5. Delay in seeking treatment
6. Vague, inconsistent, or changing history
7. The comatose child, the child in shock, or the child in arrest “See Pink 12”

### **Treatment of suspected child abuse in the field**

1. Suspect abuse but do not accuse the caretaker. Every time a child is encountered by the healthcare professional having a traumatic injury the question that should come to mind is, "Could this be abuse?" In most cases the answer will be an obvious "no;" however, enough uncertainty will exist in some cases to warrant further assessment.
2. Follow normal initial assessment priorities of the ABC's and mental status when caring for the child.
3. Provide the appropriate intervention procedures for any abnormal findings such as respiratory, trauma, or other medical emergencies; shock; or altered mental status.
4. EMS providers are in key positions to assess environmental conditions and the observable interactions of family and child. Environmental signs of possible abuse or neglect may include but not be limited to: unsanitary conditions; garbage scattered about the house; unsafe conditions such as open, unguarded windows or potentially dangerous objects within reach of children.
5. Perform a detailed physical examination on any child in stable enough condition to allow for such. Examine all parts of the body for deformities, ecchymosis, lacerations, abrasions, punctures, burns, tenderness, and swelling. It is vitally important that injuries of the mouth and sternum be observed in detail prior to the initiation of resuscitative measures and documented that such injuries were found prior to resuscitation.
6. It is important to transport all children having evidence of abuse or neglect due to the possibility of additional injuries not immediately obvious. Transport of potentially abused or neglected children ensures that they receive the appropriate and necessary social service. Assistance may be necessary from law enforcement, OLMC, etc.
7. Convey your impressions and information to the hospital staff.
8. Write a detailed and descriptive report, which provides an accurate and clear record of all observations and treatment from the time of the initial call through transfer of the patient to the ED staff. Do not make a diagnosis of abuse, and refrain from including personal opinions, emotional overtones, or interpretations. Primary caregiver quoted statements must be documented as such with quotation marks, and exactly word for word as stated by the person. As well, this legal document must be legible.
9. Contact Adult and Children's Emergency Services at 1-800-452-1999 to make a report. This is a 24-hour a day reporting number. You will be protected by law from civil liability for making such a report if made in good faith.

## ADULT ABUSE

(Title 22 MRSA, Chapter 1-A, Subsection 3477)

**“Reasonable cause to suspect** When, while acting in a professional capacity, an...ambulance attendant, emergency medical technician...suspects that an adult has been abused, neglected or exploited, and has reasonable cause to suspect that the adult is incapacitated, then the professional shall immediately report or cause a report to be made to the department.”

Call the Adult’s and Children’s Emergency Services: 1-800-452-1999 (24 hours a day). Similar protection from liability for reporting exists.

## INTOXICATED DRIVERS

(Title 29-A, Subchapter 1, Subsection 2405)

**“Persons who may report** If, while acting in a professional capacity a...emergency medical services person...knows or has reasonable cause to believe that a person has been operating a motor vehicle, hunting or operating a snowmobile, all-terrain vehicle or watercraft while under the influence of intoxicants and that motor vehicle, snowmobile, all-terrain vehicle or watercraft or a hunter has been involved in an accident, that person may report those facts to a law enforcement official.”

Immunity from civil liability for making such a report exists in Maine law.

## PATIENT RESTRAINT - GENERAL

There are situations in which EMS personnel may appropriately restrain patients, (e.g. hypoxic patient). However, EMS personnel are not expected to restrain patients if this creates a threat of substantial physical harm to themselves.

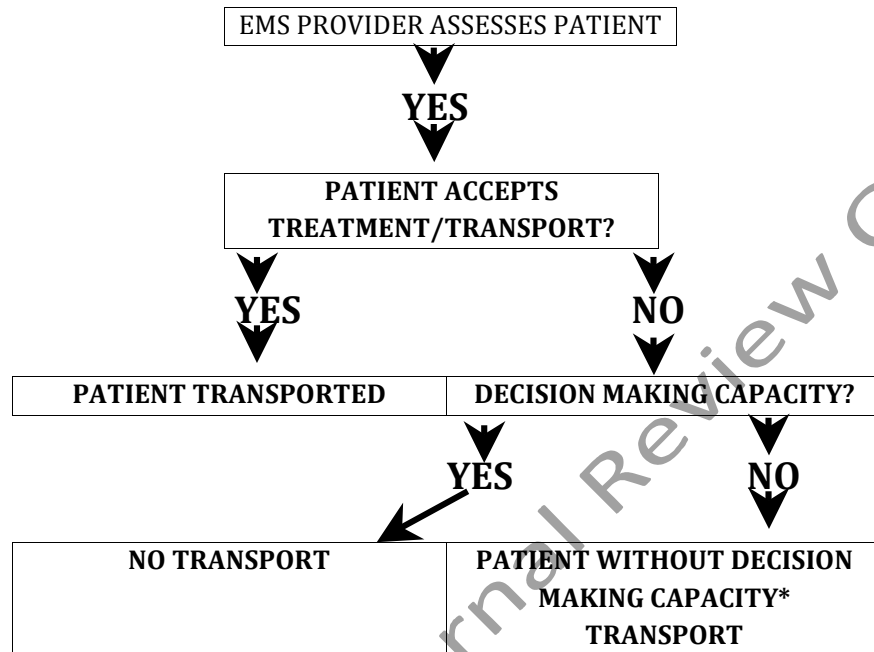
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“A licensed physician, or a person acting under his direction, may use force for the purpose of administering a recognized form of treatment which he reasonably believes will tend to safe-guard the physical or mental health of the patient, provided such treatment is administered in an emergency relating to health when the physician reasonably believes that no one competent to consent for the patient, can be consulted and that a reasonable person concerned for the welfare of the patient would consent.” (Title 17-A, Subsection 106). Contact OLMC or the patient’s physician for this type of direction.

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Finally, a person believed by a law enforcement officer to be mentally ill and who presents a threat of imminent and substantial physical harm to self and others, may be taken into protective custody by the officer. EMS personnel may follow the directions of this officer with regard to restraint. (Title 34-B, Subsection 3862.)

## TRANSPORT PROTOCOL



\* A patient without decision making capacity would be one who has one of the following: an altered mental status or intoxicated, confused, delirious, psychotic, comatose, unable to understand the language, or is a minor, etc.

1. If there is a question of decision making capacity or the patient does not appear to understand the consequences of his/her refusal of transport, then contact OLMC.
2. The patient must be informed of the consequences of his/her refusal to be transported. This must be documented in the patient/run report.
3. This screening may typically arise when an ambulance is requested by someone other than the patient (e.g. the police, a bystander). The EMS run report must always be completed.
4. If the patient refuses transport and is judged to be incompetent, the EMT must speak directly with OLMC. If unable to reach OLMC, the patient is transported.
5. **EMS System initiated patient sign offs are tremendously risky interactions and are not condoned by Maine EMS.**

6. The service is expected to review all patient sign off's through the service's quality assurance mechanism. Patient medical records must be completed for all of these interactions, including the following information:

- a. Service(s) offered,
- b. Reason service declined
- c. Discussion of alternatives to service offered and potential consequences of declining offered service,
- d. Discussion with patient that EMS services may be accessed at any time, and
- e. That the patient had decision making capacity.



## TRANSPORT OF MENTALLY ILL PATIENTS

Maine EMS personnel are generally called to transport a mentally ill patient in one of two situations:

### **Emergency Transport**

Safety for the patient and the crew is the primary concern in the transport of the mentally ill patient. Personnel should make sure they do a thorough evaluation of the patient to find and treat possible medical causes of the behavior. Refer to Yellow XX for Agitated Patient Protocol.

EMS personnel are authorized under Maine law as physician extenders to physically restrain any patient who poses a threat to themselves or others. Providers are cautioned to use physical restraint as a last resort, preferably with the assistance of local law enforcement. Once the decision is made to restrain a patient, the patient should remain restrained until arrival at the emergency department, unless it interferes with the delivery of medical care.

### **Non-Emergency Transfer**

Mentally ill patients who are being transferred usually fall into one of these categories:

**Voluntary Committal** – These patients have agreed to be transferred to a facility for evaluation and treatment of an underlying mental illness. It is important to get a thorough report on the patient prior to transport to avoid surprises en route. Voluntary committal patients can change their mind during transport. In this case, it is the responsibility of the EMS personnel to discharge the patient at a safe location, *preferably at the originating facility*. If it is not possible to return the patient to the originating facility, notify local law enforcement to meet you at your location.

**Involuntary Committal** – Patients who are being committed involuntarily must have committal papers (blue papers) completed prior to transport. Between the hours of 7 a.m. and 11 p.m. a judge has to sign the committal papers. After 11 p.m. and before 7 a.m. the papers do not have to be signed except for Riverview Psychiatric Center (formerly AMHI) – this is known as the “pajama clause”. Make sure that the transporting service is listed correctly on the papers. According to Maine law, the patient must be transported in the least restrictive form of transportation available. Make sure you get a thorough history to determine whether restraints will be necessary. *If the receiving facility refuses to accept the patient after evaluating them, the transporting service is required by law to transport the patient back to the originating facility.*

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Comment: Need Page Reference

### **PROTECTIVE HEADGEAR REMOVAL**

The decision to remove protective headgear from an injured patient rests with the EMS provider on scene unless a Maine licensed physician is on scene and takes responsibility for the patient. It is important to immobilize the patient in a neutral in-line position, regardless of whether or not you choose to remove the helmet. This requires that you evaluate each patient and determine if other equipment (i.e. shoulder pads) must be removed or if additional padding under the shoulders or head is necessary. *In the case of an athletic injury, the EMS*

provider should consider input from athletic trainers. Disputes should be referred to OLMC for resolution.

When deciding whether to remove protective headgear, please evaluate the following criteria:

Can you access the airway?

YES

Does the helmet fit snugly?

Can you adequately immobilize the spine while maintaining neutral in-line position?

Leave the headgear in place

NO

Remove the headgear

NO

Remove the headgear

YES

NO

Remove the headgear

YES

## DEFIBRILLATION / CARDIOVERSION SETTING

### DEFIBRILLATION SETTING\*

	Initial	Second	Third	Subsequent
Adult	360 J	360 J	360 J	360 J
Pediatric	2 J/kg	4 J/kg	4 J/kg	4 J/kg

\*Adult 360 J monophasic or MEP or 200 J biphasic for all attempts

### CARDIOVERSION SETTING\*

	Initial	Second	Third	Subsequent
Adult (V-TACH)	100 J	200 J	300 J	360 J
Adult (SVT)	50 J	100 J	200 J	300 J
Pediatric	0.5 -1.0 J/kg	2 J/kg	2 J/kg	2 J/kg

\* Use closest machine setting possible

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For biphasic defibrillation device, use monophasic equivalents as noted above.

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